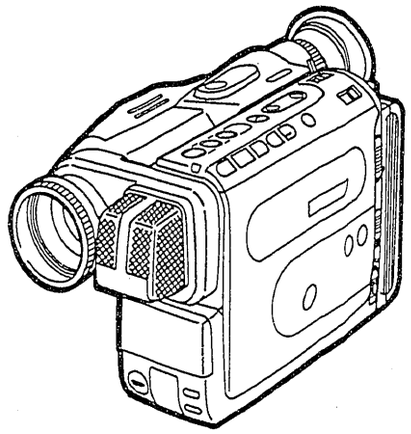
HITACHI

SERVICE MANUAL

TK | **No.3555E**

VM-E25A(U,C)

Technical Data



MANUAL RELATED TO THE VM-E25A

TITLE	MODEL	MANUAL No.
Technical Information	VM-E25A	No. 3557E
RF UNIT	VM-RF85A	No. —
POWER ADAPTER /CHARGER	VM-AC80A	No. 3311E

SPECIFICATIONS

■ **General**

Power requirements	6V DC
Power consumption	7.8 watts (when "FOCUS M." is displayed in the viewfinder)
Dimensions	4-1/8"(W) x 4-3/16"(H) x 7-13/16"(D) 105(W) x 107(H) x 199(D) mm (when the grip is horizontal) 2-5/16"(W) x 6-1/4"(H) x 7-13/16"(D) 59(W) x 159(H) x 199(D) mm (when the grip is vertical)
Weight	1.7 lbs (770 gr)
Operating temperature	32°F ~ 104°F
Storage temperature	−4°F ~ 140°F

■ **Video Recorder Section**

Format	8mm
Record/playback system	Two video record/playback heads
Video signal	EIA standard NTSC color
Tape speed	14.3 mm/sec.
Video input	1.0 Vp-p, 75 ohm
Video output	1.0 Vp-p, 75 ohm
Audio input	−7.8 dBs (316 m Vrms)
Audio output	−7.8 dBs (316 m Vrms)
Fast forward/rewind time	Less than 8 minutes with P6-120 cassette

■ **Camera Section**

Scanning	525 lines/60 fields/30 frames
Required minimum illumination	4 lux
Pickup device	1/3" C.C.D
Lens diameter	34 mm

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SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers'. Critical parts are marked with ⚠ in the schematic diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safety operate without danger of electrical shock.

X-RAY RADIATION

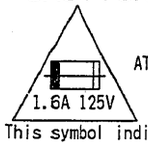
The primary source or X-ray radiation in this viewfinder is the picture tube. The tube used in this view-finder is especially constructed to limit X-ray radiation emission. For continued X-ray radiation protection, the replacement tube must be the same type as the original, Hitachi approved one.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

8mm VIDEO CAMERA/RECORDER

October 1991 TOKAI WORKS

CAUTION AGAINST FUSE REPLACEMENT



CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 1.6A,125V FUSE.
ATTENTION: AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE ET DE 1.6A,125V.

This symbol indicates Fast Operating Type Fuse.

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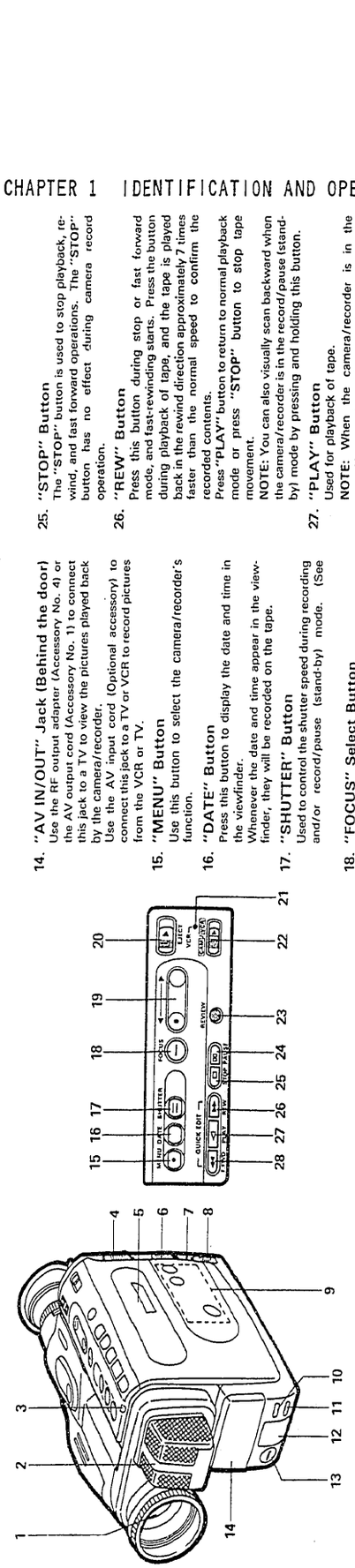
CHAPTER 1 IDENTIFICATION AND OPERATION OF CONTROLS



1. **Lens**
F2.0 (6 ~ 48 mm) 8:1 power zoom lens features auto focus and auto iris fuctions.
2. **Stereo Microphone**
Sensitive to source coming from the direction in which the camera is pointed.
3. **Record Indicator**
Lights up when camera/recorder is recording. During self timer operation, this light flashes to indicate recording is about to begin then stays on to indicate recording has started.
4. **"UNLOCK" Switch**
To turn on the power of the camera, slide this switch downward, and while holding it, twist the grip. This turns the camera on.
To turn off the power of the camera, slide the switch downward, and while holding it, twist the grip in the opposite direction.
5. **Cassette Holder**
Slide "EJECT" switch to open the cassette holder. Be aware of the cassette direction when inserting.
NOTE: Power source must be connected to open the cassette holder.
6. **"BATTERY EJECT" Lever**
Releases the battery, AC adapter/charger or battery case attached to the camera/recorder.
7. **"POWER"/Dew Indicator Light**
Flashing of the light indicates dew condensation on camera/recorder mechanism. While this light is flashing, the unit will not operate. If this occurs, eject the tape and leave the power on. When the light stops flashing, the unit can be operated.
8. **"POWER" Switch**
This turns the camera/recorder on and off. Press and hold the small red button in the switch to switch it.
9. **"TITLE" Buttons**
Use these buttons to recall the stored title in memory and record it superimposed on the picture being shot.
10. **"RESET" Button**
When the linear time counter is displayed in the viewfinder, pressing this button resets the counter to "0:00:00".
11. **"DISPLAY" Button**
When this button is pressed, the display in the viewfinder will change in sequence.
12. **Infrared ray receiving section**
Receives infrared rays from the remote control unit.
13. **"FADE" Button**
During recording you can add a professional touch to your recordings by fading in and out of scenes.
14. **"AV IN/OUT" Jack (Behind the door)**
Use the RF output adapter (Accessory No. 4) or the AV output cord (Accessory No. 1) to connect this jack to a TV to view the pictures played back by the camera/recorder.
Use the AV input cord (Optional accessory) to connect this jack to a TV or VCR to record pictures from the VCR or TV.
15. **"MENU" Button**
Use this button to select the camera/recorder's function.
16. **"DATE" Button**
Press this button to display the date and time in the viewfinder.
Whenever the date and time appear in the viewfinder, they will be recorded on the tape.
17. **"SHUTTER" Button**
Used to control the shutter speed during recording and/or record/pause (stand-by) mode. (See
18. **"FOCUS" Select Button**
Press this button to switch between automatic and manual focusing.
If this button is pressed and "FOCUS M." appears in the viewfinder, the camera/recorder enters the manual focus mode. When "FOCUS. M" is not displayed, focusing is automatic.
19. **Focus Button (◄ or ►)**
For manual focusing, press the ◄ or ► button to bring the subject into focus.
20. **"EJECT" Switch**
Operates with "POWER" either on or off, if a power source is connected to the camera/recorder.
21. **"VCR" Indicator**
Lights when you select the VCR mode.
22. **"CAM/VCR" Select Switch**
Slide this switch to select the Camera or VCR mode. When the VCR mode is selected, "VCR" indicator lights.
23. **"REVIEW" Button**
Used to review the last few seconds of the recorded segment in the record/pause mode.
24. **"PAUSE" Button**
When this button is pressed in the playback mode, the tape stops and you can view a still picture. When this button is pressed again, the tape runs to resume playback.
25. **"STOP" Button**
The "STOP" button is used to stop playback, rewind, and fast forward operations. The "STOP" button has no effect during camera record operation.
26. **"REW" Button**
Press this button during stop or fast forward mode, and fast-rewinding starts. Press the button during playback of tape, and the tape is played back in the rewind direction approximately 7 times faster than the normal speed to confirm the recorded contents.
Press "PLAY" button to return to normal playback mode or press "STOP" button to stop tape movement.
NOTE: You can also visually scan backward when the camera/recorder is in the record/pause (stand-by) mode by pressing and holding this button.
27. **"PLAY" Button**
Used for playback of tape.
NOTE: When the camera/recorder is in the record/pause (stand-by) mode, pressing and holding this button will play the tape at normal speed.
28. **"F.FWD" Button**
Press this button during stop or rewind mode, and fast-forwarding starts.
Press the button during playback of tape, and the tape is played back in the forward direction approximately 9 times faster than the normal speed to confirm the recorded content.
Press "PLAY" button to return to normal playback mode or press "STOP" button to stop tape movement.
NOTE: You can also visually scan forward when the camera/recorder is in the record/pause (stand-by) mode by pressing and holding this button.

36. **Clock Battery Compartment**
Pull the tab to open the cover and install the clock battery (provided).

37. **Eye Cup**
Pull out the eye cup all the way when using it and adjust the diopter control so that the subject is seen most clearly in the viewfinder.
Always push in the eye cup after use.

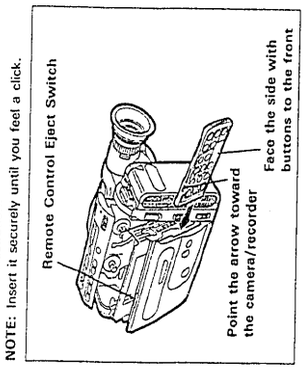
38. **Camera/Recorder Control Buttons**
These shaded buttons on the remote control function the same as those on the camera/recorder.

39. **"REC" Buttons**
Press these buttons at the same time to record pictures from an external input connected to the "AV IN/OUT" jack. These buttons can be used as record buttons only when the camera/recorder is set to the VCR mode.

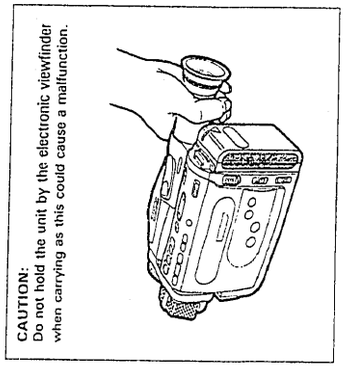
40. **"SELF TIMER" Button**
This button is used when performing self-timer recording.

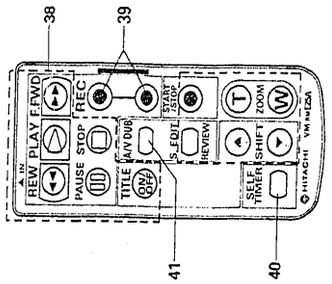
41. **"AV DUB" Button**
This button is used to record new audio and video in place of existing audio and video.

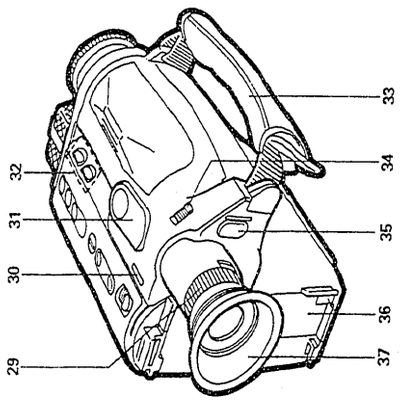
■ To house the remote control in the camera/recorder
Insert the remote control into the cassette holder as shown in the illustration.
NOTE: Insert it securely until you feel a click.



- Press the remote control eject switch to remove the remote control when using it.
- Always return the remote control into the camera/recorder when not using it so that you do not lose it.







34. **"EYE CUP UNLOCK" Switch**
If dust or foreign matter adheres inside the viewfinder slide this switch and hold it, then pull out the eye cup. After cleaning the inside, re-attach the eye cup.

35. **"START/STOP" Button**
This button is used to control the camera/recorder. When the "VCR" indicator is turned off, pressing this button starts the tape begins recording. "REC" appears in the viewfinder. When this button is pressed again, "PAUSE" appears instead of "REC". The tape stops and the camera/recorder enters the record/pause (stand-by) mode.

29. **Diopter Control**
To use the electronic viewfinder without eyeglasses on, turn this control ring for your optimum focus adjustment.

30. **"ZOOM MODE" Button**
Use this button to switch the digital zoom feature. Usually press this button so that "ZM:1" appears in the viewfinder.

31. **Power Zoom Switch**
This switch performs zooming electrically.
"W": Picture becomes wider gradually.
"T": Picture becomes telescopic gradually.

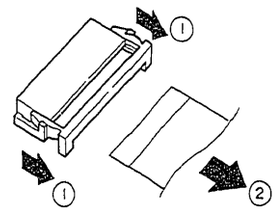
32. **"DATE/TIME" Set Buttons**
These buttons are used to set the clock (time and date) in your camera/recorder so that it can be recorded on your tapes for future reference. May also be used to select the camera/recorder function.

33. **Hand Strap**
Adjust to best fit to your hand.

CHAPTER 2
DISASSEMBLY

Note 1: Since the lens block of this 8mm video camera/recorder is mode with high precision, do not remove components other than those specified (zoom motor, iris block and master cover).
Note 2: If loading and unloading cannot be done, this 8mm video camera/recorder cannot be dismantled easily.
Note 3: Prepare a 3V DC power supply when dismantling the mechanical block.
Note 4: Disconnect flat cables from connectors by the following procedure to prevent damage to connectors. Since most circuit boards in this 8mm video camera/recorder are connected via board-in type connectors, be sure to follow DISASSEMBLY when removing the circuit boards.

HOW TO DISCONNECT A FLAT CABLE



① Release the lock of the connector on the left and right simultaneously.
② Pull out the flat cable

1. IDENTIFICATIONS OF MAJOR COMPONENTS

1-1. MAJOR COMPONENTS AND CIRCUIT BOARDS

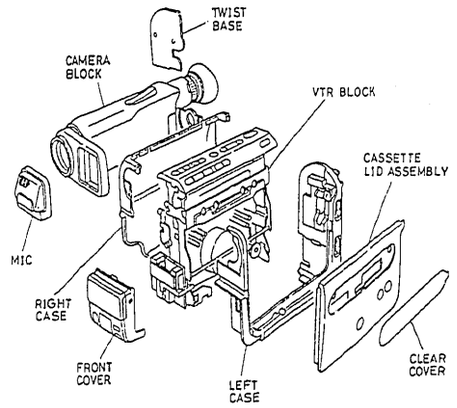


Fig. 2-1

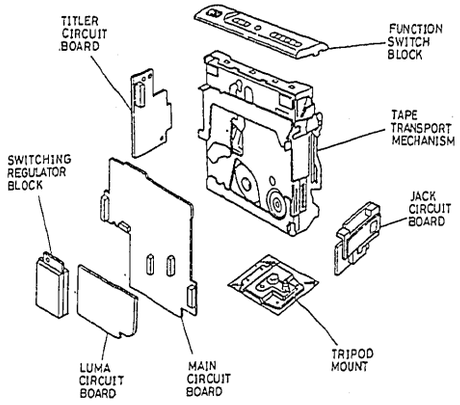


Fig. 2-2

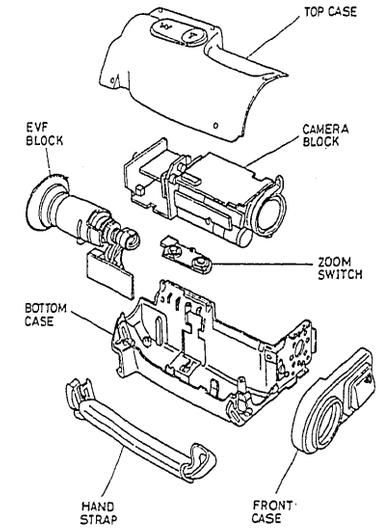


Fig. 2-3

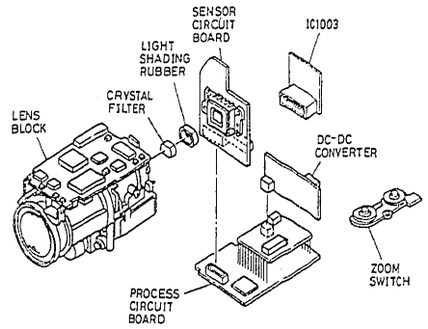


Fig. 2-4

1-2. MAJOR MECHANICAL COMPONENTS

1-2-1. Sub Chassis Assembly

1. Middle Pole
2. Take-up Guide Roller Rail
3. Take-up Guide Arm
4. Pressure Roller
5. Take-up Guide Roller Base
6. Take-up Reel Disk
7. Safety Tab/Tape Select Switch
8. Take-up Reel Brake
9. Reel Drive Idler
10. Supply Reel Disk
11. Supply Reel Brake
12. Tape Thickness Switch
13. Tension Control Arm
14. Tension Relay Arm
15. Supply Guide Roller Base (Supply Guide Roller(1))
16. Tension Arm
17. Supply Guide Roller (3)
18. Supply Guide Roller Rail

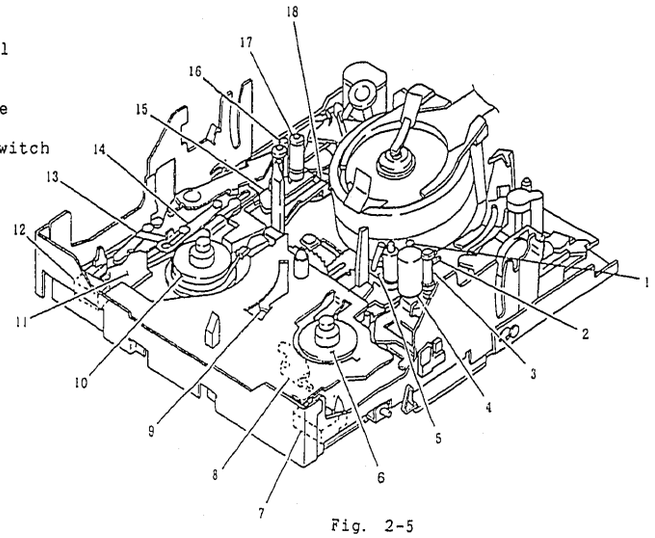


Fig. 2-5

1-2-2. Main Chassis Assembly

1. Cylinder
2. Take-up Guide Post
3. Capstan Motor
4. Center Relay Gear
5. Reel Drive Belt
6. Pressure Roller Drive Arm
7. Take-up Loading Cam Gear
8. Eject Arm
9. Cassette Holder Switch
10. Center Gear
11. Supply Cam Gear Holder
12. Sub Chassis Slide Arm
13. Supply Loading Cam Gear
14. Supply Brake Gear
15. Slide Gear
16. Mechanism State Switch
17. Loading Gear (3)
18. Loading Gear (2)
19. Loading Gear (1)
20. Loading Motor
21. Supply Guide Roller (2)
22. Cylinder Base

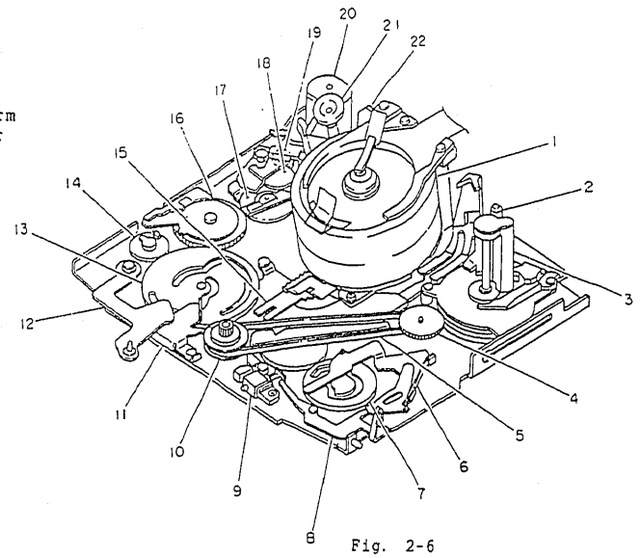


Fig. 2-6

2. DISASSEMBLY METHOD WHEN TROUBLE OCCURS

The following shows the disassembly method when loading or un loading cannot be done normally due to a defect.
When loading and unloading can be done normally, refer to "3. NORMAL DISASSEMBLY METHOD".

2-1. WHEN UNLOADING CANNOT BE DONE

2-1-1. To Set To The Eject State

1) Set the unit to the VCR mode. (See Fig. 2-11)
2) Remove four (4) screws and remove the front cover in the direction of arrow (A).
3) Open the right cover in the direction of arrow (B).
4) Disconnect one (1) flat cable from the PG931 on the main circuit board.
5) Remove five (5) screws and remove the right case in the direction of arrow (C).
6) Remove the luma circuit board in the direction of arrow (D) separating from the main circuit board. (The main and luma circuit boards are connected via two board-in type connectors.)
7) Set the unit to the camera mode. (See Fig. 2-12)

Advise 1:
If an electric circuit system defective, disconnect connector CN615 from the main circuit board and apply 3V DC to the connector (female). Unloading can now be done.

If unloading still cannot be dons by the above procedure, there is a defect in the mechanical block. After removing the camera block, remove the left case by the following procedure an then disassemble the mechanical block.

8) Remove the DC power supply (DC3V) from CN615. (See Fig. 2-12)
9) Disconnect one (1) connector (CN982) and remove one (1) screw. (See Fig. 2-13)
10) Press the center of the cassette lid and remove the clear cover which is pasted on cassette lid with double-sided adhesive tape, in the direction of arrow (A). Be careful not to damage the clear cover and cassette lid at this time. (See Fig. 2-14)
11) Remove two (2) screws and remove the cassette lid in the direction of arrow (B).
12) Remove one (1) screw and remove the jack circuit board in the direction of arrow (C) separating from the main circuit board. (The main and jack circuit boards are connected via board-in type connector.)
13) Remove two (2) screws holding the left case.
14) Lift the function switch, remove the left case in the direction of arrow (D).

Advice 2:
If the defect is in the loading motor, remove it and then turn loading gear (1) in the direction of the arrow. Unloading can be dune manually. (See Fig. 2-15)

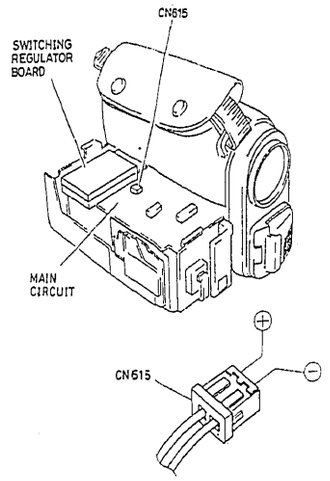


Fig. 2-12

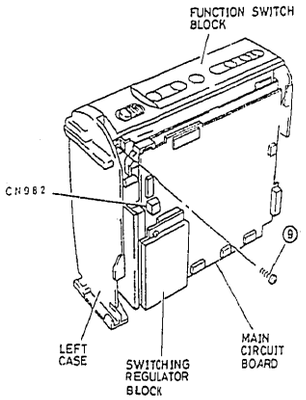


Fig. 2-13

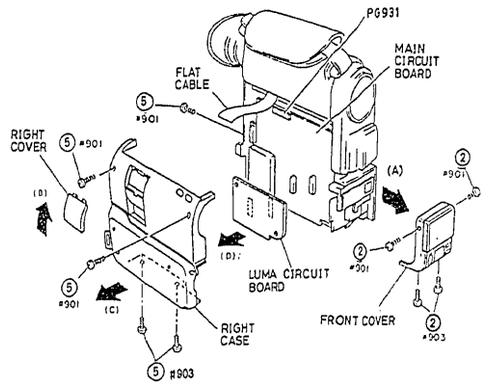


Fig. 2-11

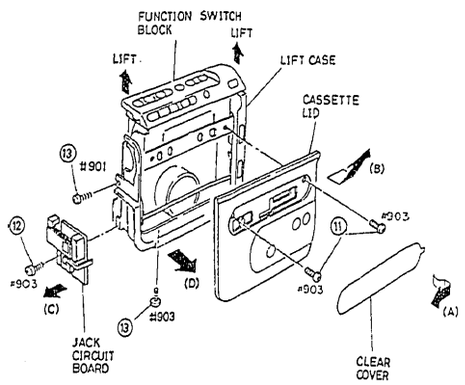


Fig. 2-14

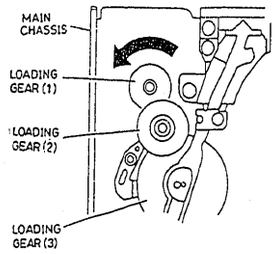


Fig. 2-15

2-2. WHEN LOADING CANNOT BE DONE

2-2-1. Right Case Removal

1) Remove four (4) screws and remove the front cover in the direction of arrow (A). (See Fig. 2-16)
2) Remove one (1) screw and remove the microphone (MIC) in the direction of arrow (B) from the front case.
3) Disconnect one (1) connector (CN401) on the MIC.
4) Remove six (6) screws and remove the top case in the direction of arrow (C).
5) Remove one (1) screw holding the EVF block and remove one (1) screw holding the zoom switch.
6) Remove the EVF block in the direction of arrow (D) from the bottom case and disconnect one (1) flat cable (CN1802) on the EVF circuit board.
7) Remove one (1) screw holding the right case.
8) Remove one (1) screw and remove the jack circuit board in the direction of the arrow separating from the main circuit board. (The main and jack circuit boards are connected via board-in type connector.) (See Fig. 2-17)
9) Remove three (3) screws and remove the front case in the direction of the arrow.
10) Remove two (2) screws holding the twist section.
11) Move the camera front arm in the direction of the arrow. (See Fig. 2-18)
12) Remove one (1) screw holding the right case.
13) Remove one (1) screw holding the right case and remove two (2) screws holding the camera section. (See Fig. 2-19)
14) Remove two (2) screws holding the right case, press the UNLOCK button and remove the camera section with the right case in the direction of arrow (A) from the VCR section. (See Figs. 2-19, 2-20)

Note: Be careful that the microphone cable is not damaged when removing the camera section.

15) Disconnect one (1) flat cable (CN931) and one (1) connector (CN401) on the main circuit board. (See Fig. 2-20)

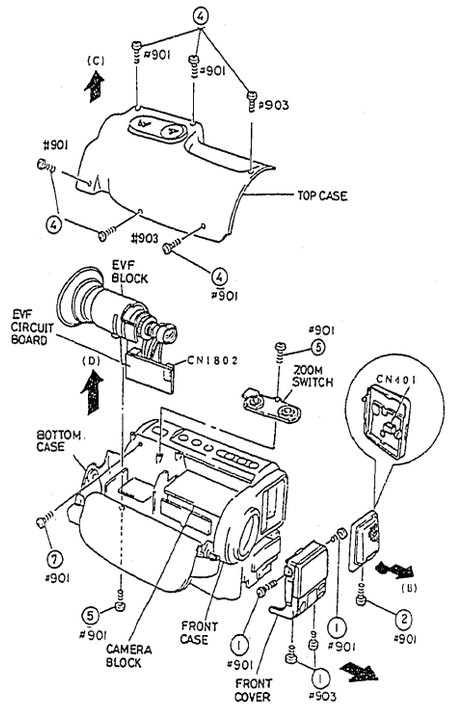


Fig. 2-16

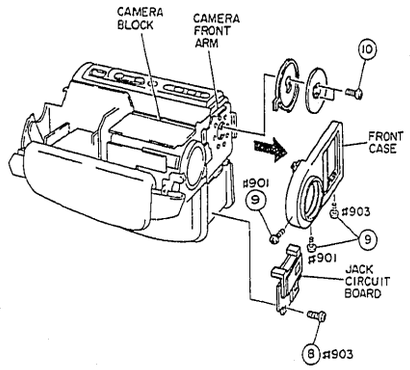


Fig. 2-17

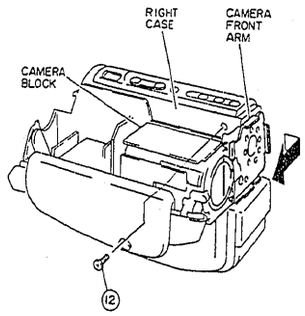


Fig. 2-18

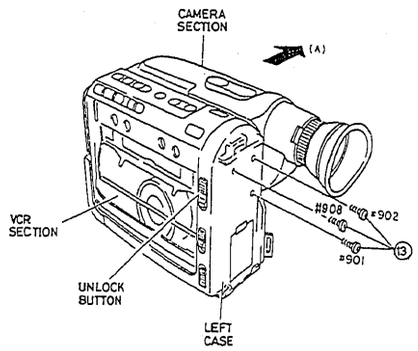


Fig. 2-19

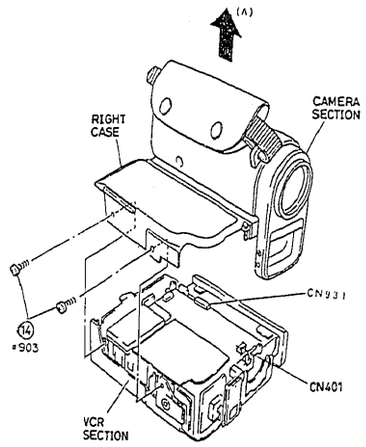


Fig. 2-20

2-3. HOW TO REMOVE THE REMOTE CONTROL WHEN IT IS INSERTED IN REVERSE

Normally, the 8mm video camera/recorder is structured so the remote control cannot be inserted in reverse.

1) Set the 8mm video camera/recorder to the eject state and then push out the remote control in the direction of the arrow with your fingers.

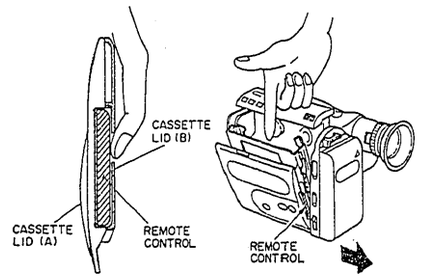


Fig. 2-20-1

2-4. HOW TO REMOVE THE LENS HOOD

If the lens hood cannot be removed by the procedure shown in Fig. 2-20-2, remove it by the procedure shown in Fig. 2-20-3.

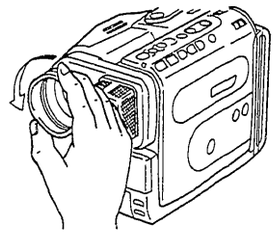


Fig. 2-20-2

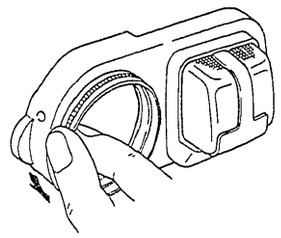


Fig. 2-20-3

3. NORMAL DISASSEMBLY METHOD

The following shows the disassembly method when loading and unloading can be done normally.
If loading and unloading cannot be done, refer to "2. DISASSEMBLY WHEN TROUBLE OCCURS".

3-1. VCR SECTION REMOVAL/SEPARATING THE VCR SECTION AND CAMERA SECTION

Prepare a DC 3V power supply because loading and unloading are done during disassembly.

3-1-1. Front Cover, Right Case, Jack Circuit Board

(1) Front Cover

Note: The front cover can be removed in both the VCR and camera mode.

1) Remove four (4) screws holding the front cover. (See Fig. 2-21)
2) Remove the front cover in the direction of arrow (A).

(2) Right Case

Note: Set the unit to the loading state and to the VCR mode when removing the right case.

3) Remove the right cover in the direction of arrow (B). (See Fig. 2-21)
4) Disconnect one (1) flat cable from PG931 on the main circuit board.
5) Remove five (5) screws holding the right case.
6) Remove the right case in the direction of arrow (C).

(3) Jack Circuit Board

3) Remove one (1) screw holding the jack circuit board. (See Fig. 2-21)
4) Remove the jack circuit board in the direction of arrow (A) separating the from the main circuit board.
(The jack and main circuit boards are connected via board-in type connector.)

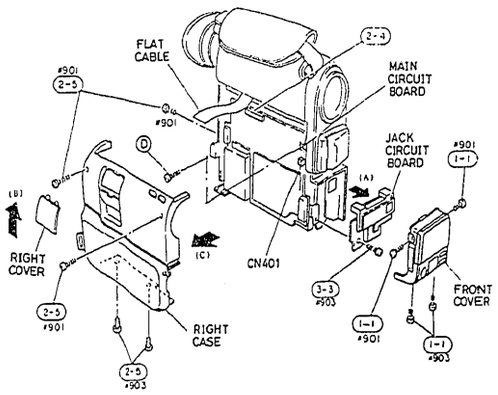


Fig. 2-21

3-1-2. Microphone (MIC)

1) Remove one (1) screw holding the MIC. (See Fig. 2-22)
2) Remove the MIC in the direction of arrow (A) and disconnect one (1) connector (CN401) on the MIC.

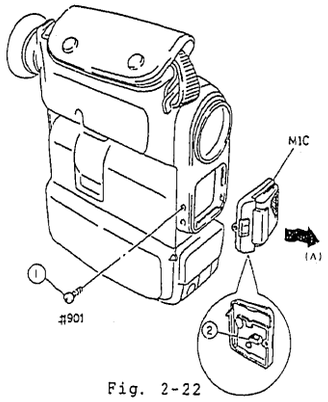


Fig. 2-22

3-1-3. Separating the VCR Section and Camera Section

ORDER FOR REMOVING PARTS	ITEM No.
· Front Cover, Right Case	3-1-1
· MIC	3-1-2

Note 1: Remove screw (D) holding the camera section and disconnect connector CN401 on the main circuit board. (See Fig. 2-21)

1) Set the unit to the camera section.
2) Remove two (2) screws holding the VCR section and camera section. (See Fig. 2-23)
3) Remove two (2) screws holding the VCR section and camera section.
4) Press the UNLOCK button and hold it, then remove the camera section in the direction of arrow (A).

Note 2: Attach the camera section to the VCR section by the reverse procedure to removal and perform the following steps. If they are not performed, the camera section may rattle.

1) Attach the right case.
2) Check that the camera section rotates and locks normally.
3) Set the unit to the VCR mode and remove two screws ②.
4) Tighten two screws ② while separating the VCR and camera sections.

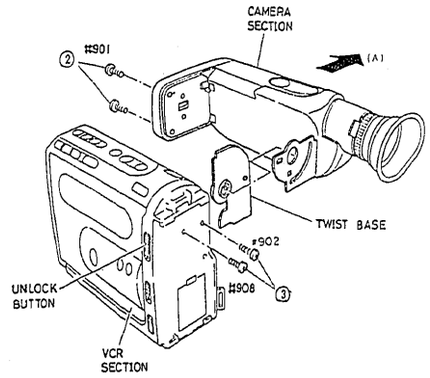


Fig. 2-23

3-1-4. Cassette Lid

Note: When removing the cassette lid, set the unit to the camera mode and to the eject state.

1) Remove two (2) screws holding the cassette lid (A). (See Fig. 2-24)
2) Release three (3) tabs and remove the cassette lid (A) in the direction of arrow (A).
3) Remove two (2) screws holding the cassette lid (B) and remove the cassette lid (B) in the direction of arrow (B).

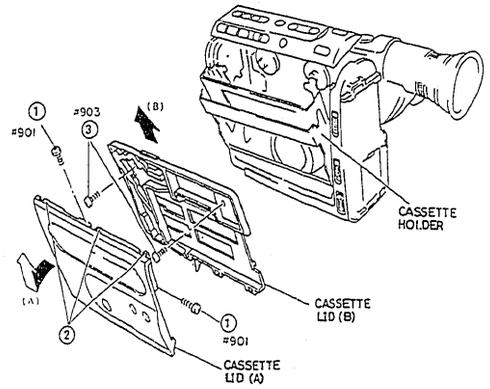


Fig. 2-24

3-1-5. Left Case, Tripod Mount, Luminance (Luma) Circuit Board, Switching Regulator Block

ORDER FOR REMOVING PARTS	ITEM No.
· Front Cover, Right Case, (Jack Circuit Board)	3-1-1
· MIC	3-1-2
· Separating the VCR Section and Camera Section	3-1-3
· Cassette Lid	3-1-4

Note 1: It is not necessary to remove the jack circuit board when removing only the luma circuit board switching regulator block.

(1) Left Case

Note 2: When removing the left case, set the unit to the camera mode and to the eject state.

1) Remove three (3) screws holding the left case. (See Fig. 2-25)
2) Remove the left case in the direction of arrow (A).

(2) Tripod Mount

3) Remove one (1) screw holding the tripod mount. (See Fig. 2-25)

(3) Luma Circuit Board

1) Remove the luma circuit board in the direction of arrow (B) separating the from the main circuit board.
(The main and luma circuit boards are connected via two board-in type connectors.) (See Fig. 2-25)

(4) Switching Regulator Block

1) Remove one (1) screw holding the switching Regulator block. (See Fig. 2-25)
2) Remove the switching Regulator block in the direction of arrow (B) separating the from the main circuit board. (The main circuit board and switching Regulator block are connected via board-in type connector.)

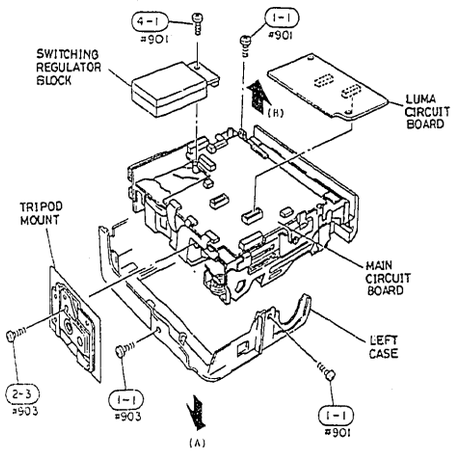


Fig. 2-25

3-1-6. Titler Circuit Board, Main Circuit Board, Function Switch Block

ORDER FOR REMOVING PARTS	ITEM No.
· Front Cover, Right Case, (Jack Circuit Board)	3-1-1
· MIC	3-1-2
· Separating the VCR Section and Camera Section	3-1-3
· Cassette Lid	3-1-4
· Left Case, (Tripod Mount, Luma Circuit Board, Switching Regulator Block)	3-1-5

Note 1: It is not necessary to remove the jack circuit board, luma circuit board and switching regulator block when removing only the titler circuit board.

Note 2: It is not necessary to remove the luma circuit board when removing only the function switch block.

(1) Titler Circuit Board

1) Remove two (2) screws holding the titler circuit board. (See Fig. 2-26)
2) Remove the titler circuit board in the direction of arrow (A) separating the from the main circuit board.
(The main and titler circuit boards are connected via board-in type connector.)

(2) Main Circuit Board

3) Disconnect four (4) flat cables (CN101, CN612, CN613, CN802) and one (1) connector (CN615) on the main circuit board. (See Fig. 2-26)
4) Release two (2) tabs and open the main circuit board in the direction of arrow (B).
5) Disconnect four (4) flat cables (CN611, CN804, CN805, CN806) on the main circuit board and remove the main circuit board from the tape transport mechanism. (See Fig. 2-27)

(3) Function Switch Block

3) Disconnect one (1) flat cable (CN802) on the main circuit board. (See Fig. 2-26)
4) Release two (2) tabs and open the main circuit board in the direction of arrow (B).
5) Disconnect one (1) flat cable (CN805) on the main circuit board. (See Fig. 2-27)
6) Remove one (1) screw holding the circuit board holder (2).
7) Remove the circuit board holder (2) in the direction of arrow (A).
8) Release one (1) tab and remove the flat cable holder in the direction of arrow (B).
9) Release two (2) tabs and remove the function switch block in the direction of arrow (A). (See Fig. 2-28)
10) Remove the function switch block's flat cable from the trouble sensor's flat cable, pasted with double-sided adhesive tape. Be careful not to damage the flat cables.

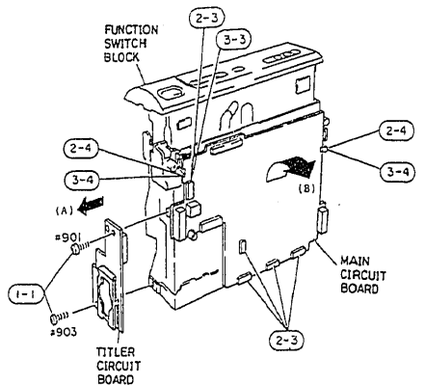


Fig. 2-26

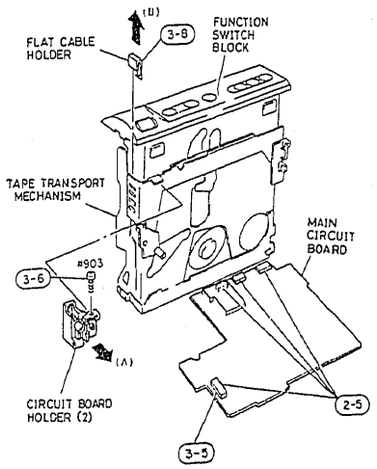


Fig. 2-27

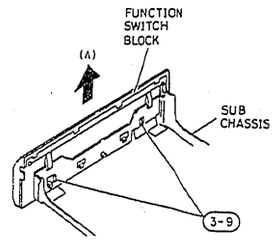


Fig. 2-28

3-1-7. Tape Transport Mechanism

ORDER FOR REMOVING PARTS	ITEM No.
- Front Cover, Right Case, Jack Circuit Board	3-1-1
- MIC	3-1-2
- Separating the VCR Section and Camera Section	3-1-3
- Cassette Lid	3-1-4
- Left Case, Tripod Mount, Luma Circuit Board, Switching Regulator Block	3-1-5
- Titler Circuit Board, Main Circuit Board, Function Switch Block	3-1-6

1) Remove one (1) screw holding the circuit board holder (1). (See Fig. 2-29)
2) Remove the circuit board holder (1) in the direction of arrow (A).
3) Remove one (1) screw holding the circuit board holder (3).

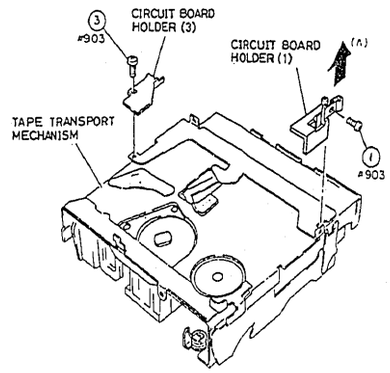


Fig. 2-29

3-2. CAMERA SECTION REMOVAL

Note: Components other than the bottom case can be removed even if the VCR and camera sections are not separated.

3-2-1. Top Case, Electronic Viewfinder (EVF) Block

Note: The top case and EVF block can be removed in both the VCR and camera modes.

(1) Top Case

1) Remove six (6) screws holding the top case. (See Fig. 2-31)
2) Remove the top case in the direction of arrow (A).

(2) EVF Block

3) Remove one (1) screw holding the zoom switch. (See Fig. 2-31)
4) Remove one (1) screw holding the EVF block and bottom case.
5) Remove the EVF block in the direction of arrow (A).
6) Disconnect one (1) flat cable (CN1802) on the EVF circuit board.

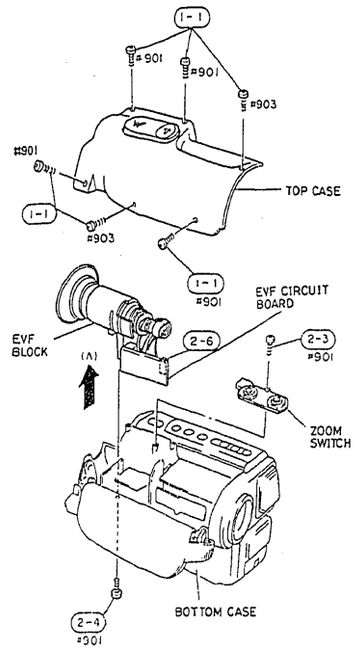


Fig. 2-31

3-2-2. Front Case

ORDER FOR REMOVING PARTS	ITEM No.
- MIC	3-1-2
- Top Case	3-2-1

Note: Set the unit to the loading state and to the VCR mode when removing the front case. Also set the unit to the VCR mode when attaching it.
1) Remove three (3) screws holding the front case. (See Fig. 2-32)
2) Remove the front case in the direction of arrow (A).

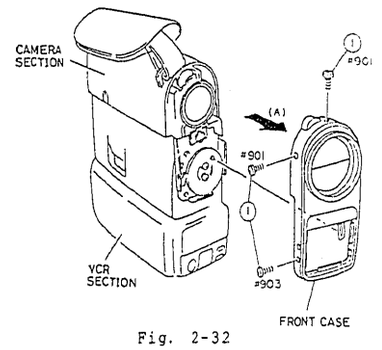


Fig. 2-32

3-2-3. Camera Block, Zoom Switch

ORDER FOR REMOVING PARTS	ITEM No.
- MIC	3-1-2
- Top Case	3-2-1
- Front Case	3-2-2

Note 1: The camera block and zoom switch can be removed in both the VCR and camera modes.

(1) Camera Block

1) Remove three (3) screws holding the camera block. (See Fig. 2-33)
2) Remove the camera block and zoom switch in the direction of arrow (A) from the bottom case.
3) Disconnect one (1) connector (CN1105) on the process circuit board.
4) Disconnect one (1) flat cable (CN931) on the process circuit board. (See Fig. 2-34)

Note 2: "PC 1" is printed on the camera side of the flat cable (CN931: 30-pin) that is connected between the VCR section (main circuit board) and camera section (process circuit board).

(2) Zoom Switch

1) Disconnect one (1) connector (CN1303 on IC1105) on the process circuit board. (See Fig. 2-33)

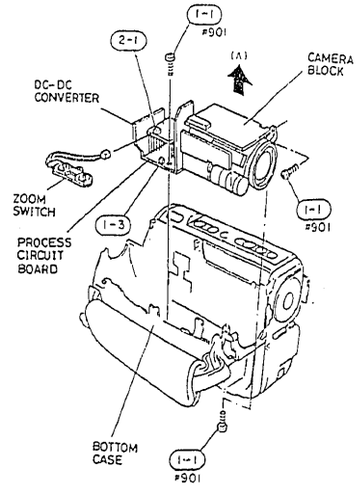


Fig. 2-33

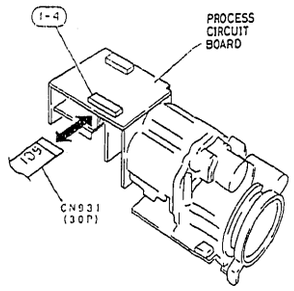


Fig. 2-34

3-2-4. Twist Switch, Bottom Case

ORDER FOR REMOVING PARTS	ITEM No.
· Front Cover, Right Case	3-1-1
· MIC	3-1-2
· Separating the VCR Section and Camera Section	3-1-3
· Top Case, EVF Block	3-2-1
· Front Case	3-2-2
· Camera Block, Zoom Switch	3-2-3

(1) Twist Switch

1) Remove one (1) screw holding the twist switch. (See Fig. 2-35)

(2) Bottom Case

2) Remove one (1) screw holding the camera flat cable holder. (See Fig. 2-35)

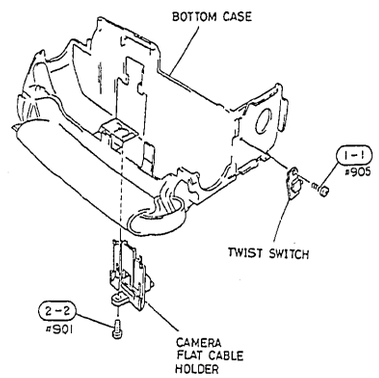


Fig. 2-35

3-2-5. DC-DC Converter, Process Circuit Board, Sensor Circuit Board, IC1003, Lens Block

ORDER FOR REMOVING PARTS	ITEM No.
· MIC	3-1-2
· Top Case, EVF Block	3-2-1
· Front Case	3-2-2
· Camera Block, Zoom Switch	3-2-3

Note: Since the lens block of this 8mm video camera/recorder is mode with high precision, do not remove components other than the zoom motor, iris block and master cover.

(1) DC-DC Converter

1) Remove the DC-DC converter in the direction of arrow (A) separating the from the process circuit board. (The process circuit board and DC-DC converter are connected via board-in type connector.) (See Fig. 2-36)

(2) Process Circuit Board

2) Disconnect one (1) connector (CN1302 on IC1105) on the process circuit board. (See Fig. 2-36)
3) Disconnect one (1) flat cable (CN1103) on the autofocus circuit board.
4) Remove the process circuit board in the direction of arrow (B) separating the from the sensor circuit board. (The process and sensor circuit boards are connected via board-in type connector.)

(3) Sensor Circuit Board, IC1003, Lens Block

5) Remove the IC1003 in the direction of arrow (C) separating the from the sensor circuit board. (The IC1003 and sensor circuit board are connected via board-in type connector.) (See Fig. 2-36)
6) Remove two (2) screws holding the sensor circuit board.
7) Remove the sensor circuit board from the lens block in the direction of the arrow (C). This causes the light shading rubber and crystal filter between the lens block and sensor circuit board to be removed. Be careful not to damage them.

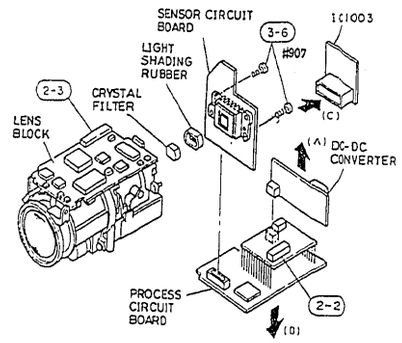


Fig. 2-36

3-2-6. Zoom Motor, Iris Block, Master Cover

Note: Since the lens block of this 8mm video camera/recorder is mode with high precision, do not remove components other than the zoom motor, iris block and master cover.

ORDER FOR REMOVING PARTS	ITEM No.
· MIC	3-1-2
· Top Case, EVF Block	3-2-1
· Front Case	3-2-2
· Camera Block	3-2-3

(1) Zoom Motor

1) Disconnect one (1) connector (CN01AF) on the autofocus circuit board. (See Fig. 2-37)
2) Remove two (2) screws holding the zoom motor.
3) Remove the zoom motor in the direction of arrow (A).

(2) Iris Block

1) Disconnect one (1) connector (CN1302 on IC1105) on the process circuit board. (See Fig. 2-37)
2) Remove one (1) screw holding the iris block.
3) Remove the iris block in the direction of arrow (B). Be careful not to damage the iris block. Also be careful that dust, etc. dose not adhere to the iris block (especially, the blades).

(3) Master Cover

1) Remove one (1) screw holding the master cover. (See Fig. 2-37)
2) Release one (1) tab in the direction of arrow (C) and remove the master cover.

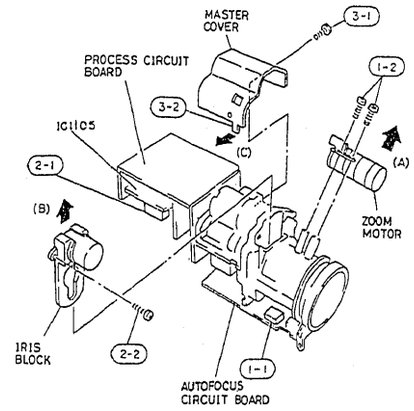


Fig. 2-37

3-2-7. Electronic Viewfinder (EVF) Circuit Board, CRT

ORDER FOR REMOVING PARTS	ITEM No.
· Top Case, EVF Block	3-2-1

(1) EVF Circuit Board

1) Disconnect one (1) connector (CN801) on the EVF circuit board. (See Fig. 2-38)
2) Disconnect CRT socket from the CRT.

(2) CRT

3) Remove one (1) screw holding the CRT. (See Fig. 2-38)
4) Remove the EVF lens block in the direction of arrow (A).
5) Remove the CRT in the direction of arrow (B).

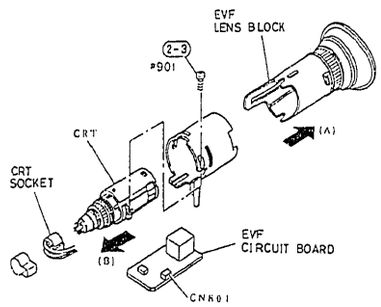


Fig. 2-38

3-3. SUB CHASSIS ASSEMBLY REMOVAL

ORDER FOR REMOVING PARTS	ITEM No.
· Tape Transport Mechanism	3-1-7

Note 1: Before removing the sub chassis assembly, be sure to set the mechanical block to the eject state.

3-3-1. Main Chassis Bracket (1), (2)

Note: Lower the cassette holder to lock it when removing main chassis bracket (1) and (2).

1) Remove three (3) screws holding the main chassis bracket (1). (See Fig. 2-41)
2) Remove five (5) screws holding the main chassis bracket (2).

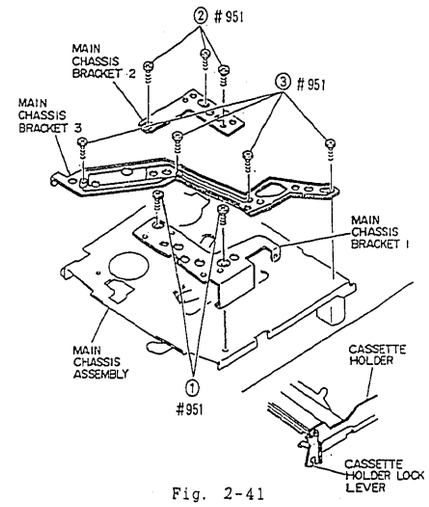


Fig. 2-41

3-3-2. Cassette Holder Damper, Cassette Holder

(1) Cassette Holder Damper

1) Remove one (1) E-ring holding the cassette holder damper. (See Fig. 2-42)
2) Remove the cassette holder damper from the sub chassis.

(2) Cassette Holder

3) Remove one (1) screw holding the cassette holder. (See Fig. 2-42)
4) Remove two (2) screws holding the cassette holder. (See Fig. 2-43)
5) Move engaged section (A) of the holder from the main chassis. (See Fig. 2-42) The cassette holder shaft comes to section (C) of the cassette holder slide groove. Push the cassette holder slide chassis in to release the cassette holder shaft from the cassette holder and sub chassis.
6) Move the cassette holder in the direction of arrow (D). (See Fig. 2-43) The cassette holder shaft comes to section (E) of the cassette holder slide groove. Push the cassette holder slide chassis in to release the cassette holder shaft from the cassette holder and sub chassis.

Note: Be careful not to band (damage) the cassette holder, cassette holder slide chassis and sub chassis when removing and reinstalling the cassette holder.
Reinstalling the cassette holder by the reverse procedure to removal.

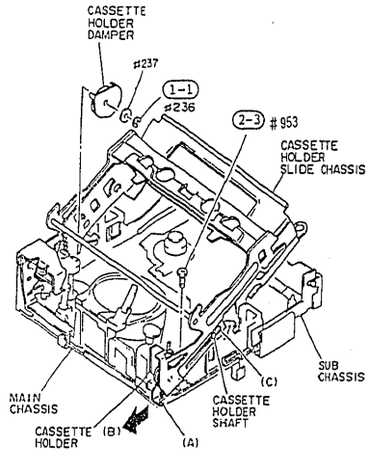


Fig. 2-42

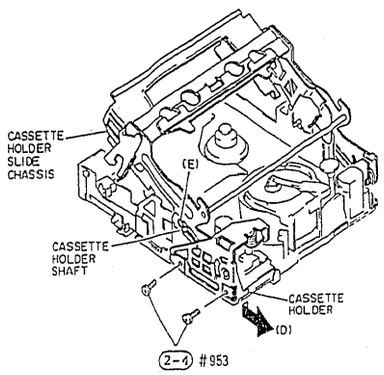


Fig. 2-43

3-3-3. Sub Chassis Cover

ORDER FOR REMOVING PARTS	ITEM No.
- Cassette Holder Damper, Cassette Holder	3-3-2

1) Remove three (3) screws holding the sub chassis cover. (See Fig. 2-44)
2) Release one (1) tab and remove the end LED from the sub chassis cover.

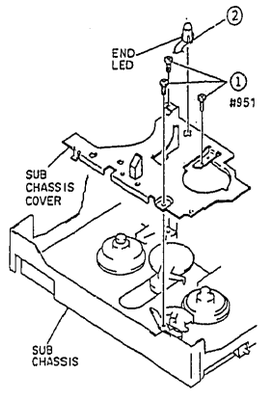


Fig. 2-44

3-3-4. Reel Drive Idler, Sub Chassis Assembly

ORDER FOR REMOVING PARTS	ITEM No.
- Cassette Holder Damper, Cassette Holder	3-3-2
- Sub Chassis Cover	3-3-3

(1) Reel Drive Idler
1) Remove one (1) washer holding the reel drive idler. (See Fig. 2-45)
2) Pull out the reel drive idler from the main chassis.

(2) Sub Chassis Assembly
3) Apply DC3V to the loading motor (CN904) so the sub chassis performs loading until screw (A) holding the sub chassis can be seen. When screw (A) can be seen, disconnect DC3V from the loading motor and stop loading. (See Fig. 2-46)
4) Remove screw (A) and apply DC3V to the loading motor in the reverse way to step 3) to set the sub chassis to the eject state.
5) Remove one (1) washer holding the middle pole. (See Fig. 2-47)
6) Remove two (2) screws holding the sub chassis.
7) Pull out the shaft of middle pole from the main chassis and remove the sub chassis assembly in the direction of the arrow.

Note 1: Be careful that the trouble sensor assembly (flat cable) is not damaged when removing the sub chassis assembly.

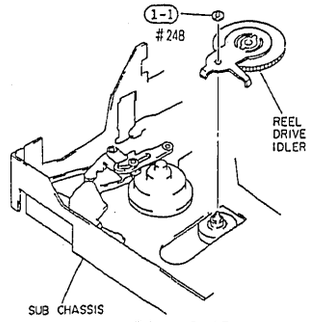


Fig. 2-45

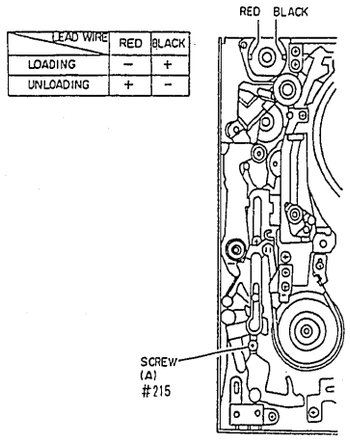


Fig. 2-46

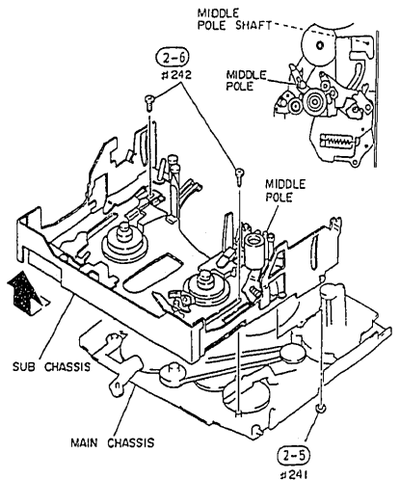


Fig. 2-47

3-4. MAIN MECHANICAL COMPONENTS ON THE SUB CHASSIS

ORDER FOR REMOVING PARTS	ITEM No.
- Tape Transport Mechanism	3-1-7
- Cassette Holder Damper, Cassette Holder	3-3-2

3-4-1. Supply Reel Brake, Tension Relay Arm, Tension Control Arm

ORDER FOR REMOVING PARTS	ITEM No.
- Sub Chassis Cover	3-3-3

1) Remove one (1) washer and pull out the supply reel brake from the sub chassis. (See Fig. 2-48)
2) Remove one (1) washer holding the tension relay arm.
3) Remove one (1) washer holding the tension control arm.
4) Pull out the tension relay arm and tension control arm from the sub chassis.

Note: Refer to Fig. 2-49 when reinstalling the tension relay arm and tension control arm.

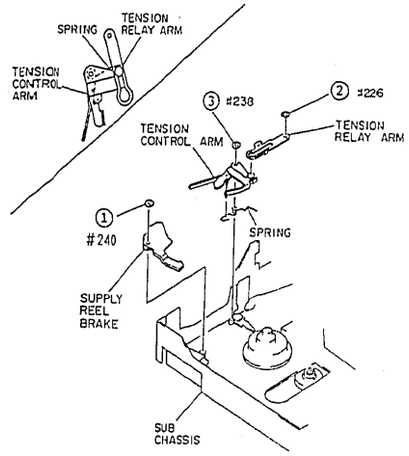
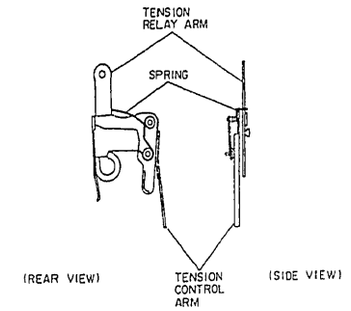


Fig. 2-48



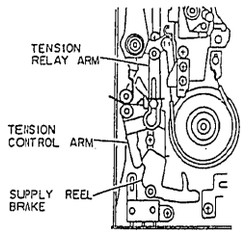


Fig. 2-49

3-4-2. Take-up Brake Control Arm, Take-up Brake Drive Arm, Take-up Reel Brake, Take-up Reel Disk

ORDER FOR REMOVING PARTS	ITEM No.
- Sub Chassis Cover	3-3-3

1) Pull out the take-up brake control arm from the sub chassis. (See Fig. 2-50)
2) Release the spring between the take-up brake drive arm and sub chassis.

3) Remove one (1) washer and pull out the take-up brake drive arm from the sub chassis.
4) Remove one (1) washer and pull out the take-up reel brake from the sub chassis.
5) Pull out the take-up reel disk from the sub chassis.

Note 1: Adjust as follows after installing the take-up reel disk.
- CHAPTER 3
3-1. REEL DISK HEIGHT ADJUSTMENT.

Note 2: Refer to Fig. 2-51 when reinstalling the take-up brake control arm, take-up brake drive arm and take-up reel brake.

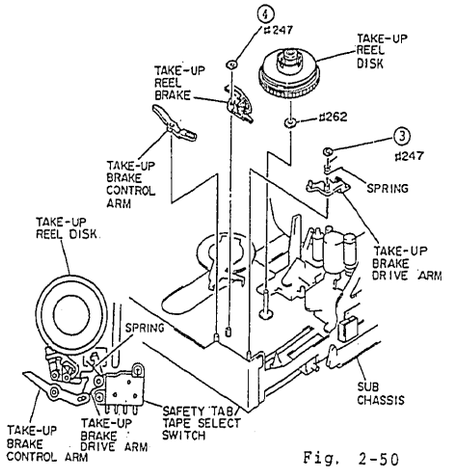
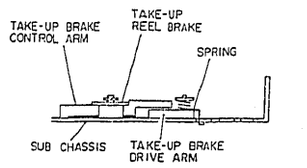


Fig. 2-50



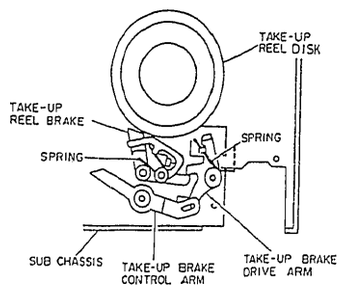


Fig. 2-51

3-4-3. Tension Arm, Supply Guide Roller (3), Tension Band, Guide Roller Spring

ORDER FOR REMOVING PARTS	*ITEM No.*
- Sub Chassis Cover	3-3-3
- Supply Reel Brake, Tension Relay Arm, Tension Control Arm	3-4-1

1) Remove one (1) screw holding the tension band. (See Fig. 2-52)
2) Release the tension spring between the tension arm and sub chassis.
3) Remove one (1) washer holding the tension arm and supply guide roller (3).
4) Pull out the tension arm, supply guide roller (3) and tension band from the sub chassis.
5) Release two (2) tabs and remove the tension band from the tension arm.
6) Remove one (1) washer holding the guide roller spring.

Note 1: Adjust as follows after installing the tension arm and tension band.
- CHAPTER 3
3-2. TENSION POLE POSITION ADJUSTMENT.
3-3. TENSION ADJUSTMENT.

Note 2: Refer to Fig. 2-53 when reinstalling the guide roller spring.

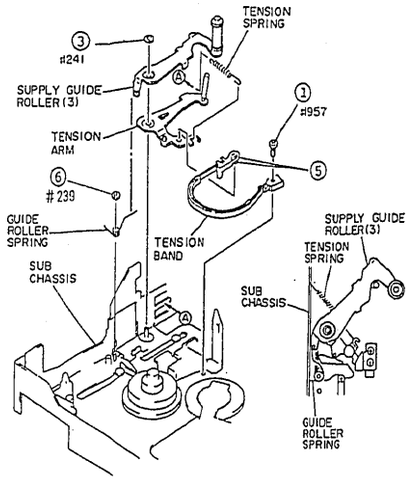


Fig. 2-52

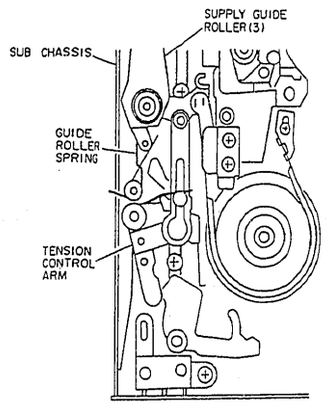


Fig. 2-53

3-4-4. Pressure Roller, Take-up Guide Arm, Middle Pole

ORDER FOR REMOVING PARTS	*ITEM No.*
- Sub Chassis Cover	3-3-3

1) Remove one (1) screw holding the pressure roller hold plate. (See Fig. 2-54)
2) Remove the pressure roller hold plate from the sub chassis.

(1) Pressure Roller
3) Release the spring between the pressure roller and sub chassis. (See Fig, 2-54)
4) Pull out the pressure roller from the sub chassis.

(2) Take-up Guide Arm, Middle Pole
3) Pull out the take-up guide arm from the sub chassis. (See Fig. 2-54)
4) Remove one (1) washer holding the middle pole shaft. (See Fig. 2-55)
5) Pull out the middle pole from the main chassis. (See Fig. 2-54)

Note 1: Adjust as follows after installing the take-up guide arm.
- CHAPTER 3
3-5. TAKE-UP GUIDE POLE/ TAKE-UP GUIDE POST HEIGHT ADJUSTMENT.

Note 2: Check that there in no gap between the upper and lower arms of the pressure roller when reinstalling the pressure roller.

Note 3: Refer to Fig. 2-56 when reinstalling the pressure roller, take-up guide arm and middle pole.

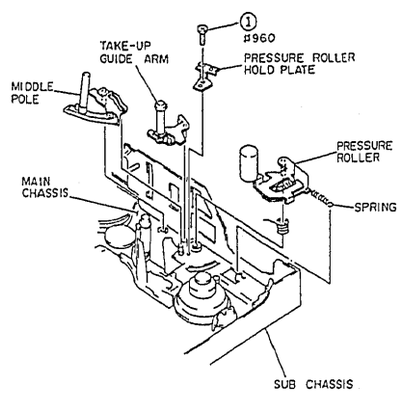


Fig. 2-54

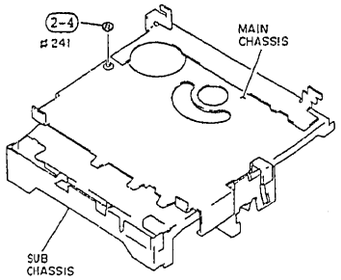


Fig. 2-55

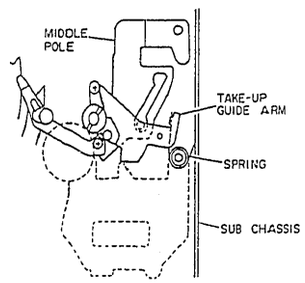


Fig. 2-56

3-4-5. Take-up Guide Roller Base, Supply Guide Roller Base

ORDER FOR REMOVING PARTS	*ITEM No.*
- Sub Chassis Cover	3-3-3
- Reel Drive Idler, Sub Chassis Assembly	3-3-4

(1) Take-up Guide Roller Base
1) Turn the take-up loading link gear in the direction of arrow (A) by 180°. (See Fig. 2-57)
2) Move the take-up loading link gear in the direction of arrow (C). (See Fig. 2-58)
3) Hold the tab of the take-up loading link gear using tweezers, etc. and lift the link gear in the direction of arrow (D), then remove the link gear in the direction of arrow (E).

(2) Supply Guide Roller Base
1) Turn the supply loading link gear in the direction of arrow (B) by 180°. (See Fig. 2-57)
2) Move the supply loading link gear in the direction of arrow (C). (See Fig. 2-58)
3) Hold the tab of the supply loading link gear using tweezers, etc. and lift the link gear in the direction of arrow (D), then remove the link gear in the direction of arrow (E).

Note 1: Adjust as follows after installing the take-up and supply guide roller bases.
- CHAPTER 3
3-6. SUPPLY GUIDE ROLLER (1)/ TAKE-UP GUIDE ROLLER HEIGHT ADJUSTMENT.

Note 2: Be careful not to bend the tab of the take-up and supply loading link gears.

Note 3: Reinstalling the take-up and supply guide roller bases by the reverse procedure to removal.

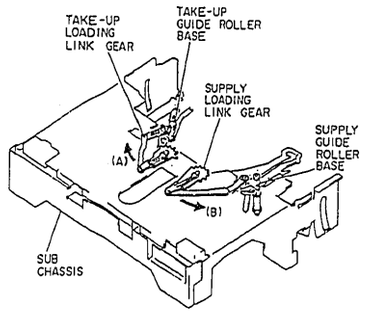


Fig. 2-57

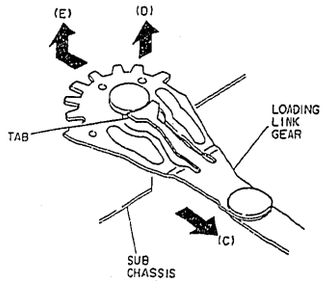


Fig. 2-58

3-4-6. Take-up Guide Roller Rail, Supply Guide Roller Rail, Supply Reel Disk

ORDER FOR REMOVING PARTS	ITEM No.
- Sub Chassis Cover	3-3-3
- Reel Drive Idler, Sub Chassis Assembly	3-3-4

(1) Take-up Guide Roller Rail

1) Remove the take-up guide roller base. (See Figs. 2-57, 2-58)
2) Remove one (1) screw holding the take-up guide roller rail. (See Fig. 2-59)

(2) Supply Guide Roller Rail, Supply Reel Disk

1) Remove the supply guide roller base. (See Figs. 2-57, 2-58)
2) Remove two (2) screws holding the supply guide roller rail and tension band holder. (See Fig. 2-59)
3) Pull out the supply reel disk from the sub chassis.

Note: Adjust as follows after installing the supply reel disk.
- CHAPTER 3
3-1. REEL DISK HEIGHT ADJUSTMENT.

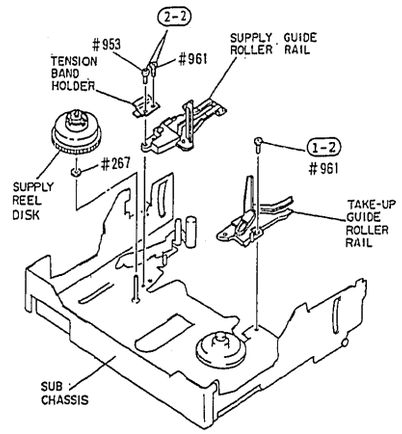


Fig. 2-59

3-4-7. Trouble Sensor Assembly (Supply End Sensor, Take-up End Sensor, Take-up Reel Sensor, End LED, Safety Tab/ Tape Select Switch, Tape Thickness Switch)

ORDER FOR REMOVING PARTS	ITEM No.
- Sub Chassis Cover	3-3-3
- Reel drive Idler, Sub Chassis Assembly	3-3-4
- Take-up Guide Roller Base	3-4-5
- Take-up Guide Roller Rail	3-4-6

1) Remove one (1) screw holding the safety tab/tape select switch. (See Fig. 2-60)
2) Remove one (1) screw holding the tape thickness switch
3) Remove one (1) screw holding the take-up end sensor. (See Fig. 2-61)
4) Remove one (1) screw holding the supply end sensor.
5) Peel out the trouble sensor assembly from the sub chassis.

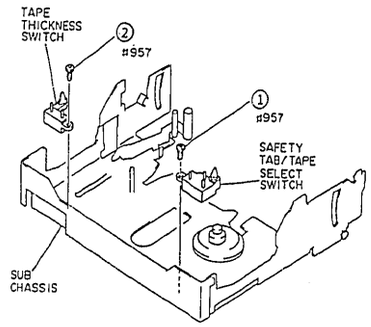


Fig. 2-60

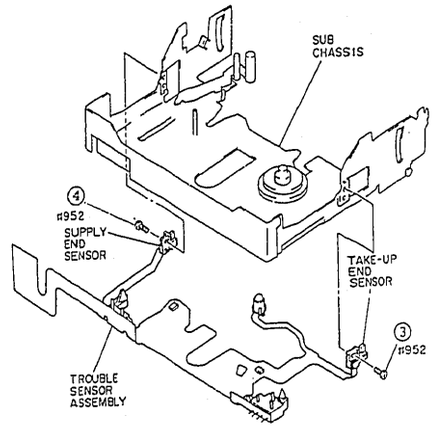


Fig. 2-61

3-5. MAIN MECHANICAL COMPONENTS ON THE MAIN CHASSIS REMOVAL

ORDER FOR REMOVING PARTS	ITEM No.
- Tape Transport Mechanism	3-1-7
- Cassette Holder Damper, Cassette Holder	3-3-2

3-5-1. Sub Chassis Slide Arm, Supply Brake Gear

ORDER FOR REMOVING PARTS	ITEM No.
- Sub Chassis Cover	3-3-3
- Reel Drive Idler, Sub Chassis Assembly	3-3-4

(1) Sub Chassis Slide Arm

1) Pull out the sub chassis slide arm and spacer from the main chassis. (See Fig. 2-62)

(2) Supply Brake Gear

1) Pull out the supply brake gear from the main chassis (See Fig. 2-62)

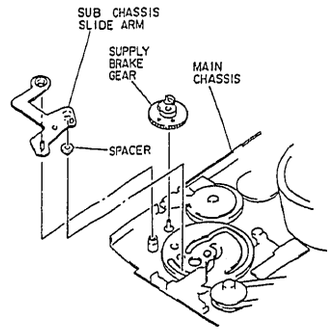


Fig. 2-62

3-5-2. Cylinder Assembly

1) Remove three (3) screws and remove the cylinder assembly from the main chassis. (See Fig. 2-63)

Note: Be careful that your fingers or tools do not touch the video head tips during work.
Attach the cylinder after reinstalling all other components. Adjust as follows after installing the cylinder assembly.
- CHAPTER 3
4. ADJUSTMENTS AFTER REPLACING CYLINDER.

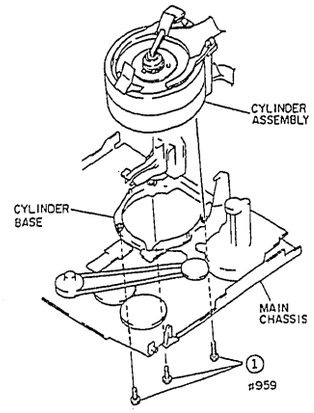


Fig. 2-63

3-5-3. Capstan Motor, Guide Roller Relay Rail (1)

(1) Capstan Motor

1) Remove three (3) screws holding the capstan motor. (See Fig. 2-64)
2) Remove the capstan motor from the main chassis.

(2) Guide Roller Relay Rail (1)

3) Pull out guide roller relay rail (1) from the main chassis. (See Fig. 2-64)

Note: Adjust as follows after installing the capstan motor.
- CHAPTER 3
3-5. TAKE-UP GUIDE POLE/TAKE-UP GUIDE POST HEIGHT ADJUSTMENT.

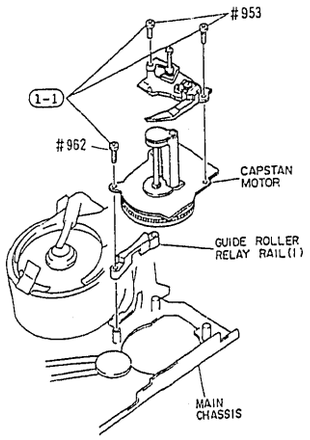


Fig. 2-64

3-5-4. Supply Guide Roller (2), Supply Tape Guide, Loading Motor

(1) Supply Guide Roller (2), Supply Tape Guide

1) Remove one (1) washer holding the supply guide roller (2). (See Fig. 2-65)
2) Remove two (2) screws holding the supply tape guide.
3) Remove the supply guide roller (2) and supply tape guide from the main chassis.

(2) Loading Motor

4) Remove one (1) screw and remove the loading motor from the main chassis. (See Fig. 2-65)

Note 1: Adjust as follows after installing the loading motor.
- CHAPTER 3
  2. PHASE MATCHING IN ASSEMBLY

Note 2: Adjust as follows after installing the supply guide roller (2).
- CHAPTER 3
  3-4. SUPPLY GUIDE ROLLER (2) HEIGHT ADJUSTMENT.

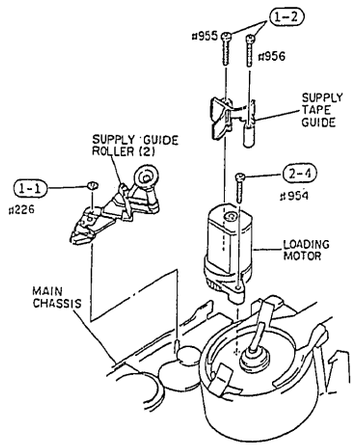


Fig. 2-65

3-5-5. Loading Gears (1), (2), (3), Mechanism State Switch

Note: Remove the sub chassis assembly from the main chassis as previously given.

ORDER FOR REMOVING PARTS	ITEM No.
- Main Chassis Bracket (1), (2)	3-3-1
- Supply Guide Roller (2), Supply Tape Guide, Loading Motor	3-5-4

(1) Loading Gear (2)

1) Remove one (1) washer holding the loading gear (2). (See Fig. 2-66)
2) Pull out loading gear (2) from the main chassis.

(2) Loading Gear (1)

3) Remove one (1) washer holding the loading gear (1). (See Fig. 2-66)
4) Pull out loading gear (1) from the main chassis.

(3) Loading Gear (3), Mechanism State Switch

3) Remove one (1) screw holding the loading gear holder. (See Fig. 2-66)
4) Pull out loading gear (3) and mechanism state switch from the main chassis.
5) Peel out the flat cable of the mechanism state switch from the main chassis. (See Fig. 2-67)

Note: Adjust as follows after installing the loading gears (1), (2), (3) and mechanism state switch.
- CHAPTER 3
  2. PHASE MATCHING IN ASSEMBLY.

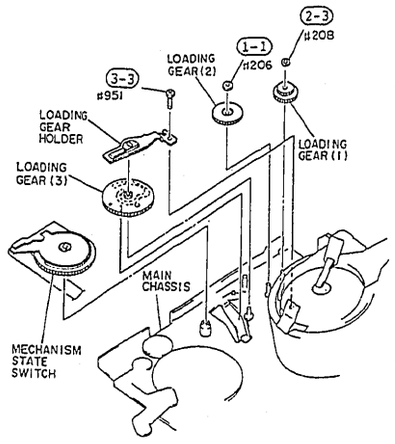


Fig. 2-66

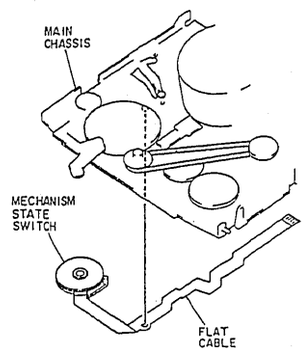


Fig. 2-67

3-5-6. Supply Loading Cam Gear

Note: Remove the sub chassis assembly from the main chassis as previously given.

ORDER FOR REMOVING PARTS	ITEM No.
- Sub Chassis Slide Arm	3-5-1

1) Remove two (2) screws holding the supply loading cam gear holder. (See Fig. 2-68)
2) Remove one (1) screw holding the supply loading cam gear.
3) Remove the supply loading cam gear from the main chassis.

Note: Adjust as follows after installing the supply loading cam gear.
- CHAPTER 3
  2. PHASE MATCHING IN ASSEMBLY.

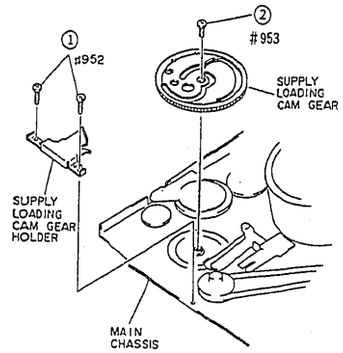


Fig. 2-68

3-5-7. Center Gear, Center Relay Gear, Reel Drive Belt

Note: Remove the sub chassis assembly from the main chassis as previously given.

ORDER FOR REMOVING PARTS	ITEM No.
- Capstan Motor	3-5-3

1) Remove the oil seal of the center gear. (See Fig. 2-69)
2) Remove one (1) washer holding the center relay gear.
3) Pull out the center gear and center relay gear with the reel drive belt from the main chassis.

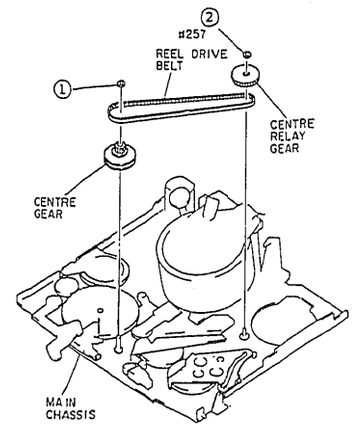


Fig. 2-69

3-5-8. Pressure Roller Drive Arm, Eject Arm, Take-up Loading Cam Gear

Note: Remove the sub chassis assembly from the main chassis as previously given.

(1) Pressure Roller Drive Arm

1) Remove one (1) screw holding the pressure roller drive arm. (See Fig. 2-70)
2) Remove the pressure roller drive arm from the main chassis.

(2) Eject Arm

3) Remove one (1) screw holding the eject arm. (See Fig. 2-70)
4) Remove the eject arm from the main chassis.

(3) Take-up Loading Cam Gear

3) Remove one (1) screw holding the take-up loading cam gear. (See Fig. 2-70)
4) Remove the take-up loading cam gear from the main chassis.

Note: Adjust as follows after installing the take-up loading cam gear.
- CHAPTER 3
  2. PHASE MATCHING IN ASSEMBLY.

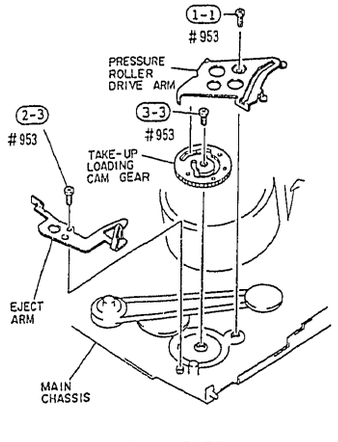


Fig. 2-70

3-5-9. Cylinder Base, Guide Roller Relay Rail (2), Slide Gear

Note 1: Remove the sub chassis assembly from the main chassis as previously given.

ORDER FOR REMOVING PARTS	ITEM No.
- Cylinder Assembly	3-5-2
- Supply Guide Roller (2), Supply Tape Guide, Loading Motor	3-5-4

Note 2: Never remove the catcher blocks from the cylinder base. The catcher blocks and cylinder base are supplied in the assembled state as a service part.

(1) Cylinder Base

1) Remove two (2) screws holding the cylinder base. (See Fig. 2-71)
2) Remove the cylinder base and slide gear plate from the main chassis.

(2) Guide Roller Relay Rail (2)

3) Remove one (1) screw holding the guide roller relay rail (2). (See Fig. 2-71)
4) Remove guide roller relay rail (2) from the main chassis.

(3) Slide Gear

3) Remove the slide gear in the direction of the arrow from the main chassis. (See Fig. 2-71)

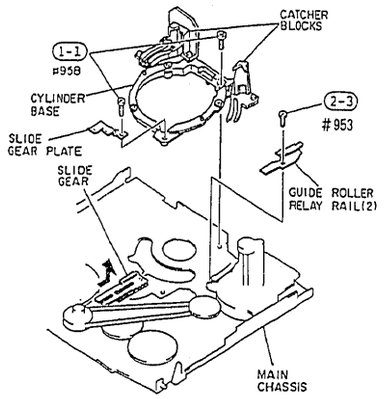


Fig. 2-71

3-5-10. Reel Drive Belt Cover
Note: Remove the sub chassis assembly from the main chassis as previously given.

ORDER FOR REMOVING PARTS	ITEM No.
· Cylinder Assembly	3-5-2
· Capstan Motor	3-5-3
· Center Gear, Center Relay Gear, Reel Drive Belt	3-5-7
· Cylinder Base, Slide Gear	3-5-9

1) Remove two (2) screws holding the reel belt cover. (See Fig. 2-72)
2) Remove the reel drive belt cover from the main chassis.

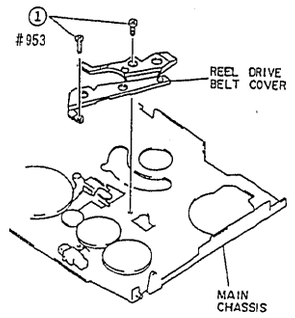


Fig. 2-72

3-5-11. Cassette Holder Switch/Dew Sensor
Note: Remove the sub chassis assembly from the main chassis as previously given.

ORDER FOR REMOVING PARTS	ITEM No.
· Main Chassis Bracket (1), (2)	3-3-1
· Cylinder Assembly	3-5-2
· Supply Guide Roller (2), Supply Tape Guide, Loading Motor	3-5-4
· Loading Gear (2), (3), Mechanism State Switch	3-5-5
· Cylinder Base	3-5-9

1) Remove one (1) screw holding the cassette holder switch. (See Fig. 2-73)
2) Peel out the cassette holder switch/dew sensor from the main chassis. (See Fig. 2-74)

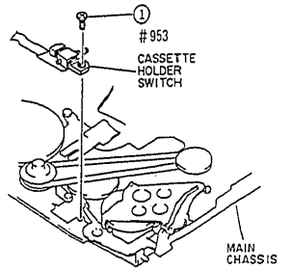


Fig. 2-73

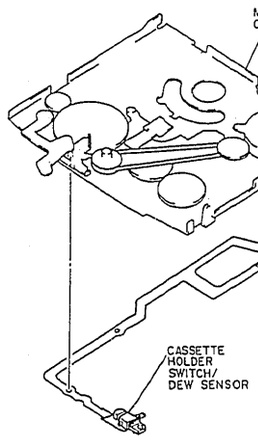
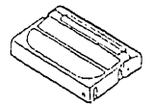
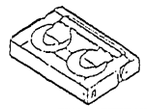
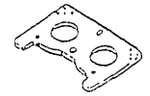
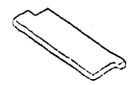
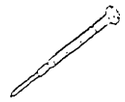
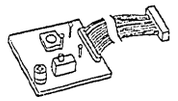
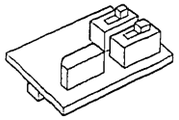
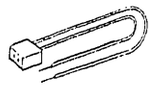
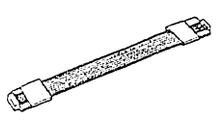
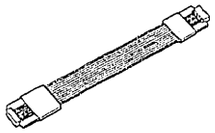
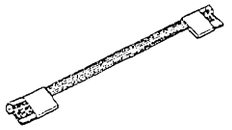
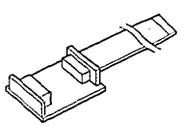
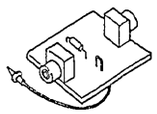
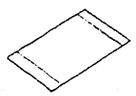
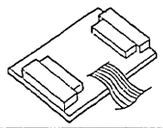
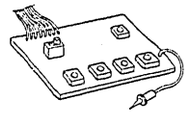
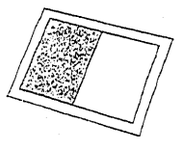
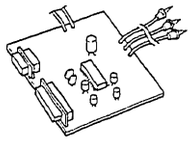
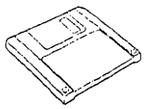
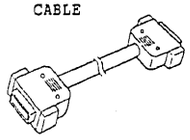


Fig. 2-74

JIG AND TAPES FOR ADJUSTMENT

Note: Mark "※" is new jigs and tools.

1. ALIGNMENT TAPE COLOR BAR/400Hz (20HSC-2) No. 7099231 	2. CASSETTE TORQUE METER SRK-8T-132 No. 7099235 SRK-8T-112 No. 7099385 	3. MASTER PLANE No. 7099237 	4. REEL DISK HEIGHT JIG No. 7099238 
5. SPECIAL DRIVER No. 7099239 	6. 0.7mm HEXAGONAL WRENCH No. 7099316	※7. ATF-R JIG No. 7099461 (SW3 ON → VM-E10A etc.) (SW3 OFF → VM-E25A only) 	※8. ATF ADAPTER JIG No. 7099421 
9. C12 LIGHT BALANCING FILTER No. 7099369	10. 2-PIN EXTENSION CABLE No. 7099283 	※11. 30-PIN EXTENSION CABLE No. 7099423	※12. 24-PIN EXTENSION CABLE No. 7099424
※13. 26-PIN EXTENSION CABLE No. 7099425 	※14. 32-PIN EXTENSION CABLE No. 7099426 	※15. 10-PIN EXTENSION CABLE No. 7099427 	※16. 6-PIN EXTENSION CABLE No. 7099428 
※17. AUTOFOCUS ADJ. JIG-1 (WINDOW) No. 7099429 	※18. AUTOFOCUS ADJ. JIG-2 (AF-JIG) No. 7099430 	※19. AUTOFOCUS ADJ. JIG-3 (AF-CAM) No. 7099431 	※20. AUTOFOCUS ADJ. JIG-4 (AF SW JIG) No. 7099432 
※21. AUTOFOCUS ADJ. CHART No. 7099433 	※22. DSP JIG No. 7099442 	※23. CAMERA ADJ. FLOPPY DISK No. 7099435 	※24. PERSONAL COMPUTER
※25. PERSONAL COMPUTER 9-PIN or 25-PIN CABLE 			

HOW TO USE THE NEW JIGS AND TOOLS

No.	NAME OF JIG & TOOLS	PARTS No.	HOW TO USE (PURPOSE OF USE)
8	ATF ADAPTER JIG	7099421	· Connect this between CN614 on the main circuit board and the ATF jig because CN614 has 8 pins and the ATF jig has 7 pins.
11	30-PIN EXTENSION CABLE	7099423	· Installed between the main circuit board and luma circuit board. · Used when the luma circuit board is removed from the main circuit board to adjust, etc.
12	24-PIN EXTENSION CABLE	7099424	· Installed between the main circuit board and luma circuit board. · Used when the luma circuit board is removed from the main circuit board to adjust, etc.
13	26-PIN EXTENSION CABLE	7099425	· Installed between the process circuit board and sensor circuit board. · Used when the process circuit board is removed from the sensor circuit board to adjust, etc.
14	32-PIN EXTENSION CABLE	7099426	· Installed between the IC1003 and sensor circuit board. · Used when the IC1003 is removed from the sensor circuit board to adjust, etc.
15	10-PIN EXTENSION CABLE	7099427	· Installed between the DC-DC converter and process circuit board. · Used when the DC-DC converter is removed from the process circuit board to adjust, etc.
16	6-PIN EXTENSION CABLE	7099428	· Installed between the EVF circuit board and flat cable (process circuit board). · Used when the EVF circuit board is removed from the camera block to adjust, etc.
17	AUTOFOCUS ADJ. JIG-1 (WINDOW)	7099429	· Used to adjust autofocus. · Installed between the AV IN/OUT terminal (video out) and color video monitor.
18	AUTOFOCUS ADJ. JIG-2 (AF-JIG)	7099430	· Used to adjust autofocus. · Connect this jig between the autofocus circuit board and the flat cable used between the process (30-pin), autofocus (24-pin) and EVF (6-pin) circuit boards, together with autofocus adjustment jig-3. · Can also be used as an extention cable between the flat cable and autofocus circuit board together with autofocus adjustment jig-3 in modes other than adjustment.
19	AUTOFOCUS ADJ. JIG-3 (AF-CAM)	7099431	· Used to adjust autofocus. · Connect this jig between the autofocus circuit board and the flat cable used between the process (30-pin), autofocus (24-pin) and EVF (6-pin) circuit boards, together with autofocus adjustment jig-2. · Can also be used as an extension cable between the flat cable and autofocus circuit board together with autofocus adjustment jig -2 in modes other than adjustment.
20	AUTOFOCUS ADJ. JIG-4 (SW JIG)	7099432	· Used to adjust autofocus. · Connect to autofocus adjustment jig-3.
21	AUTOFOCUS ADJ. CHART	7099433	· Used to adjust autofocus. · Used as the subject during autofocus adjustment.
22	DSP JIG	7099442	· Connect this between the camera section and personal computer through the personal computer 9-pin or 25-pin cable during camera adjustment.
23 24 25	CAMERA ADJ. FLOPPY DISK PERSONAL COMPUTER PERSONAL COMPUTER 9-PIN or 25-PIN CABLE	7099435	· Used for camera (DSP) adjustment. · Used to write data to the memory circuit (EEP ROM) in the camera section.

ATF ADAPTER JIG AND ATF JIG

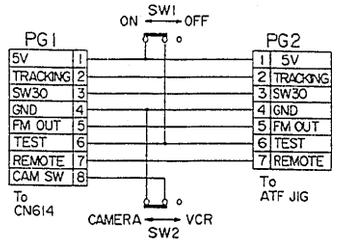
1. ATF ADAPTER JIG

Use this jig between CN614 (test plug: 8-pin) on the main circuit board and the ATF jig (7-pin).

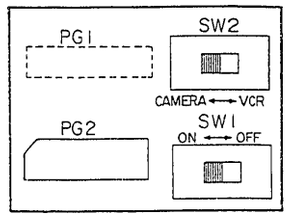
Caution 1:
SW1 on the ATF adapter jig turns ON and OFF the setting modes of the head switching point and power shutoff level. (When pins 1 and 6 of CN614 are shorted in a certain condition, there setting modes are entered.)

Caution 2:
SW2 on the ATF adapter jig has the same function as the twist switch (VCR/CAMERA switch). Set SW2 to the CAMERA position when removing the camera block for adjustment, otherwise the eject state cannot be obtained.

ATF Adapter Jig Schematic



ATF Adapter Jig Parts Location



2. ATF JIG

The ATF jig can be used in two way as follows.
The unassembled VCR block can be operated even if the 8mm video camera/recorder is not set to the test mode.

2-1. SETTING THE HEAD SWITCHING POINT AND POWER SHUT OFF LEVEL

Connect the ATF jig to CN614 on the main circuit board via the ATF adapter jig and supply power under the specified conditions. The head switching point and power shut off level can be set. Refer to the VCR adjustment in CHAPTER 4 for the setting methods.

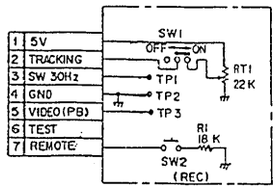
2-2. RELEASING THE AUTO TRACKING FUNCTION

Connect the ATF jig to CN614 on the main circuit board via the ATF adapter jig and set SW1 on the ATF jig to "ON".
The auto tracking function will be released. Used RT1 on the ATF jig as the tracking control.

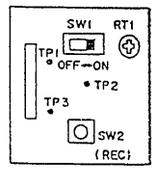
Caution: Be sure to set SW1 on the ATF jig to "OFF" when setting the head switching point and power shut off level.

ATF Jig Schematic

SW2 has the same function as the RECORDE button.



ATF Jig Parts Location



SERVICING POSITION (WHEN OBSERVING WAVEFORM AND VOLTAGES)

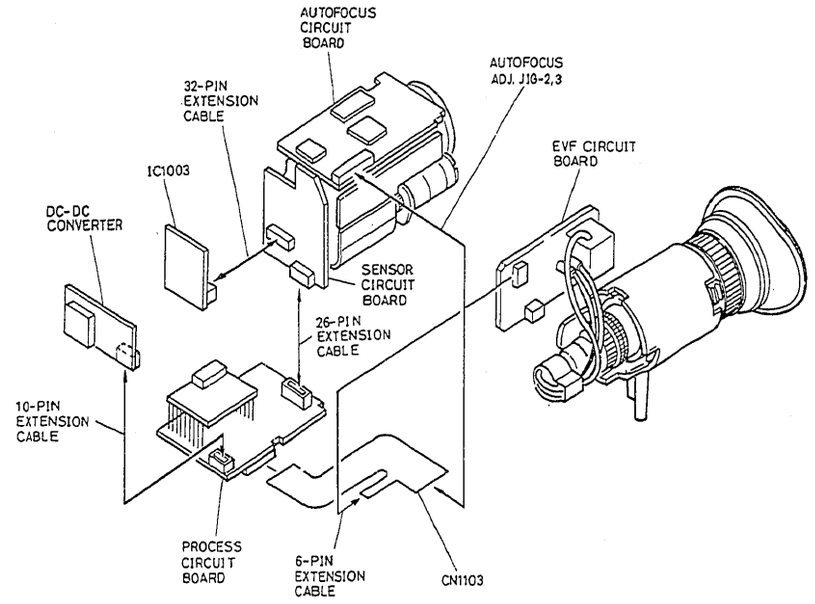


Fig. 3-A

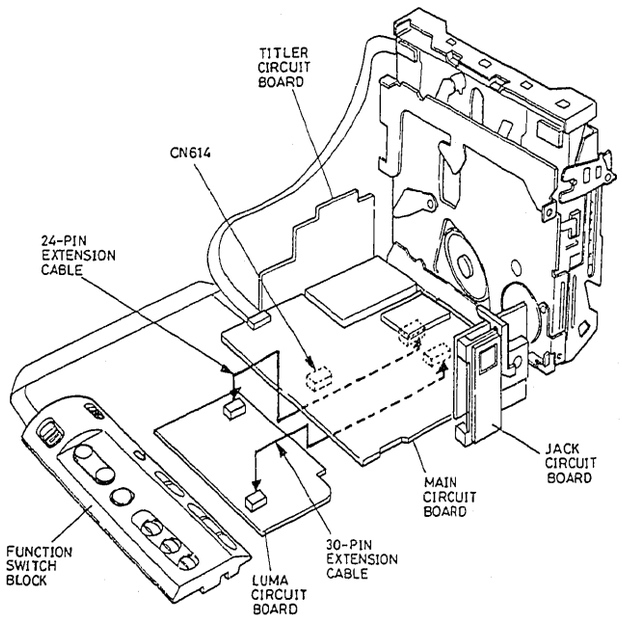


Fig. 3-B

CHAPTER 3
MECHANISM ADJUSTMENT

1. BEFORE STARTING ADJUSTMENT

- Remove the components shown in the table below beforehand, referring to the CHAPTER 2 DISASSEMBLY.

ORDER FOR REMOVING PARTS	*ITEM No.*
- Front Cover, Right Case Jack Circuit Board	3-1-1
- MIC	3-1-2
- Separating the VCR Section and Camera Section	3-1-3
- Cassette Lid	3-1-4
- Left Case	3-1-5

- With this 8mm video camera/recorder, the mechanical adjustment (tape transport block check/adjustment) can be done with the unassembled VCR block. It is not necessary to set the 8mm video camera/recorder to the test mode.
- To set the unit to the playback mode without loading a cassette, block the light shining on the END LED on the sub chassis completely and press the playback (PLAY) button on the function switch (shade the light to the END LED in the eject state). To set the unit to the eject state, connect the ATF adapter jig to CN614 on the main circuit board and set SW2 on the ATF adapter jig to "CAMERA" position.

2. PHASE MATCHING IN ASSEMBLY (Figs. 3-1, 3-2, 3-3, 3-4)

Be sure to match the phases when reinstalling the loading motor, mechanism state switch, loading gear (1), (2) and (3), supply brake gear, supply loading cam gear and take-up loading cam gear.

Note: Set the 8mm video camera to the unloading stop mode (eject state) for phase matching in assembly. Do not reuse the washers which were removed.

REINSTALLING PROCEDURE:

1) Align marks (A) and (A') on the mechanism state switch and marks (B) and (B') on the rotor. (See Fig. 3-1)
2) Install the mechanism state switch in the condition set in step 1) into the main chassis. Check that mark (C) on the loading gear 3 and mark (A) on the mechanism state switch are aligned. (See Fig. 3-2)
   Check that the guide roller control arm slides all the way in the direction of the arrow. (See Fig. 3-2)
3) Install the supply loading cam gear into the main chassis so that mark (E) on the supply brake gear and mark (F) on the supply loading cam gear are aligned. (See Fig. 3-2)
   Check that mark (D) on the supply loading cam gear and mark (A') on the mechanism state switch are aligned.
4) Install the take-up loading cam gear into the main chassis so that hole (G) of the take-up loading cam gear and the hole in the main chassis overlap each other at this time. (See Fig. 3-3)
   Install the pressure roller drive arm as shown in the figure. (See Fig. 3-3)
5) Install the supply loading cam gear holder and sub chassis slide arm as shown in the figure. (See Fig. 3-4)

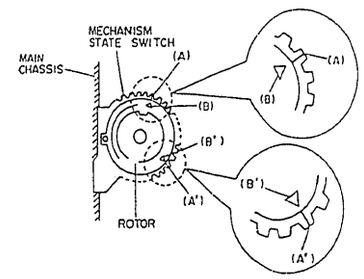


Fig. 3-1

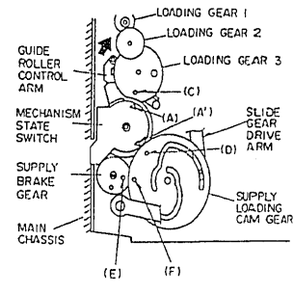


Fig. 3-2

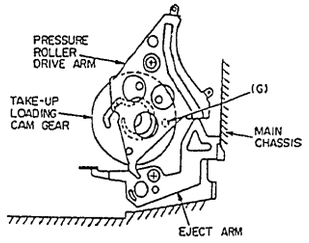


Fig. 3-3

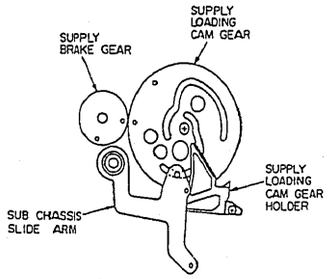


Fig. 3-4

3. TAPE TRANSPORT SYSTEM CHECK/ADJUSTMENT

The tape transport system is the path from the supply reel disk to the take-up reel disk via the cylinder. The tape transport components, especially the components which come into direct contact with the tape, should be kept clean without damage, dust and oil, etc. adhering to the contact surfaces.

The tape transport system is adjusted before shipment from the factory, so perform adjustments only when the transport are replaced or transport system adjustments have drifted. Do not reuse washers which have been removed.

3-1. REEL DISK HEIGHT ADJUSTMENT (Fig. 3-5)

Be sure to perform this adjustment after reinstalling the supply or take-up reel disk.

PURPOSE : To set the reel disk height to the specified value.		*FAULT DUE TO INCOMPLETE ADJUSTMENT*: Tape is not loaded normally.	
TEST EQUIPMENT/JIG	*STATE OF VCR*	*TEST POINT*	*ADJUSTMENT POINT*
- Master Plane - Reel Disk Height Jig	- Shut off the light from the END LED. - Mount the master plane, set the unit to the play mode and then the stop mode.		
ADJUSTMENT PROCEDURE: Note 1: Use the same procedure for the supply and take-up sides. 1) Fit the reel disk height jig to the reel disk as shown in Fig. 3-5. 2) Adjust the washer at the bottom of the reel disk so that (C) of the reel disk is between (A) and (B) of the reel disk height jig. Note 2: Thickness of take-up side washer is 0.25mm. Note 3: Thickness of supply side washer is 0.13mm.			

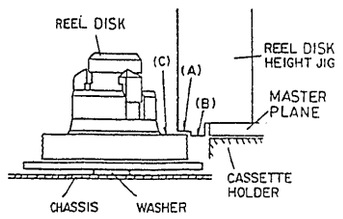


Fig. 3-5

3-2. TENSION POLE POSITION ADJUSTMENT (Fig. 3-6)

Be sure to perform this adjustment after reinstalling the tension arm, tension band and supply reel disk.

PURPOSE : To set the tape tension to the specified value.		*FAULT DUE TO INCOMPLETE ADJUSTMENT*: Tape is not loaded normally.	
TEST EQUIPMENT/JIG	*STATE OF VCR*	*TEST POINT*	*ADJUSTMENT POINT*
	Shut off the light from the end LED and set the play mode without loading a cassette.		
ADJUSTMENT PROCEDURE: 1) Set the tension spring to position (C) on the tension spring holder. 2) After loading is completed, loosen screw (E) holding the tension band holder. 3) Adjust the position of the tension band holder so the left of the hole in supply guide roller (3) is aligned with the inner flange of the tension arm. 4) After adjustment is completed, tighten screw (E).			

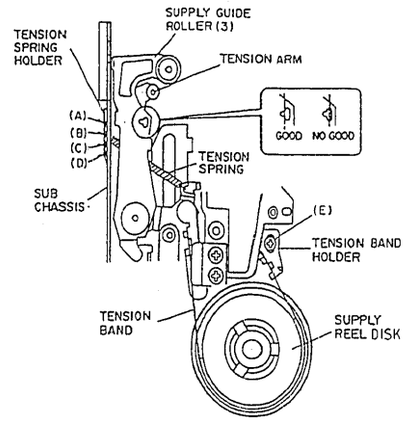


Fig. 3-6

3-3. TENSION ADJUSTMENT (Fig. 3-6)

Be sure to perform this adjustment after reinstalling the tension arm, tension band and supply reel disk.

PURPOSE : To set the tape tension to the specified value.		*FAULT DUE TO INCOMPLETE ADJUSTMENT*: Tape is not loaded normally.	
TEST EQUIPMENT/JIG	*STATE OF VCR*	*TEST POINT*	*ADJUSTMENT POINT*
- Cassette Torque Meter (SRK-8T-112)			
ADJUSTMENT PROCEDURE: 1) Set the tension spring to section (C) of the tension spring holder. (See Fig. 3-6) 2) Load the cassette torque meter and set the unit to the play mode. 3) Adjust the position of the tension spring so the tension on the supply side is 5.5 ~ 7.5 g-cm. ① If the tension is higher than 7.5 g-cm, hook the tension spring to section (D) of the tension spring holder. ② If the tension is lower than 5.5 g-cm, hook the tension spring to section (A) or (B) of the tension spring holder. Note: If the tension is changed greatly (2 g-cm or more) in this adjustment, readjust the tension pole position and tension. (If the above specifications are not satisfied, the tension band or tension spring is faulty.)			

3-4. SUPPLY GUIDE ROLLER (2) HEIGHT ADJUSTMENT (Figs. 3-7, 3-8, 3-9)

Be sure to check and adjust the height of supply guide roller (2) after reinstalling it.

Note: The supply guide roller (2) is specified as a service part while it is assembled with the guide roller base. Since it is coarsely adjusted before the unit is shipped from the factory, do not adjust its height unnecessarily.

PURPOSE : To set height relative to the cylinder.		*FAULT DUE TO INCOMPLETE ADJUSTMENT*: The play back picture distorted.	
TEST EQUIPMENT/JIG	*STATE OF VCR*	*TEST POINT*	*ADJUSTMENT POINT*
- Blank Tape - Alignment Tape - Oscilloscope - ATF Jig - ATF Adapter Jig	Connect the ATF jig (SW1:OFF) via ATF adapter jig (SW1:OFF, SW2:VCR) to CN614.	TP1 (SW30) ATF TP2 (GND) ATF TP3 (FM OUT) ATF CN614 MAIN	

ADJUSTMENT PROCEDURE:

1) Load a blank tape and set the unit to the play mode.
2) Check that no curling or creasing of tape occurs around supply guide roller (2). If curling or creasing occurs, turn the top of supply guide roller (2) using a flat-bladed screwdriver, etc. to fine adjust its height. (Fig. 3-9)
3) Connect an oscilloscope to TP3 on the ATF jig. (Fig. 3-7)
4) Trigger the oscilloscope with TP1 (SW30) on the ATF jig.
5) Load the alignment tape which was fully rewound and set the unit to the forward search mode.
6) Turn the top of supply guide roller (2) using a flat-bladed screwdriver, etc. to lower it until the rhombic FM waveform becomes unshaped. (Fig. 3-8) If the FM waveform dose not becomes unshaped when supply guide roller (2) is turned by over 360°, return supply guide roller (2) to its original height to complete this adjustment.
7) Turn the top of supply guide roller (2) in the opposite direction to that in step 6) so the rhombic FM waveform is shaped.

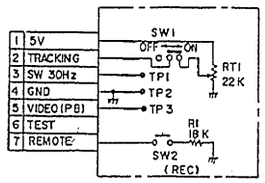


Fig. 3-7

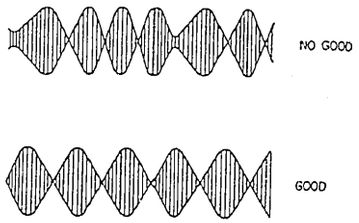


Fig. 3-8

3-5. TAKE-UP GUIDE POLE/TAKE-UP GUIDE POST HEIGHT ADJUSTMENT (Figs. 3-9, 3-10)

Be sure to perform this adjustment after reinstalling the take-up guide pole and capstan motor.

Note: The take-up guide post is specified as a service part while it is assembled with the it base. Since it is coarsely adjusted before the unit is shipped from the factory, do not adjust its height unnecessarily.

PURPOSE : To set height relative to the cylinder.		*FAULT DUE TO INCOMPLETE ADJUSTMENT*: The play back picture distorted.	
TEST EQUIPMENT/JIG	*STATE OF VCR*	*TEST POINT*	*ADJUSTMENT POINT*
- Blank Tape			

ADJUSTMENT PROCEDURE:

1) Load a blank tape and set the unit to the play mode.
2) Adjust screw (A) on the capstan motor so the tape travels at the center of the middle pole. Check that no curling or creasing occurs around the take-up guide post.
   If curling or creasing occurs, turn the top of the take-up guide post using a special driver to fine adjust its height. (Figs. 3-9, 3-10)
3) Turn the top of the take-up guide pole using a special driver to adjust its height so the tape travels at the center of the take-up guide pole.
4) Repeat reverse search and play and turn screw (B) on the take-up guide pole arm to adjust the inclination of the take-up guide pole so the variations in the height of tape are within the upper and lower flanges of the take-up guide pole.
5) Adjust screw (A) on the capstan motor so the tape travels at the center of the middle pole during play.
   Be careful that the tension of tape between the take-up guide roller and middle pole is not too high (the tape should be slightly slack).
6) Turn the top of the take-up guide pole using a special driver to adjust its height so the tape travels at the center of the take-up guide pole during play.
7) Load a blank tape which was fully rewound and set the unit to the play mode. Turn the top of the take-up guide post using a special driver to lower it so that curling occurs at the lower flange of the take-up guide post.
8) Turn the top of the take-up guide post in the opposite direction to that in step 7) so that no curling occurs.

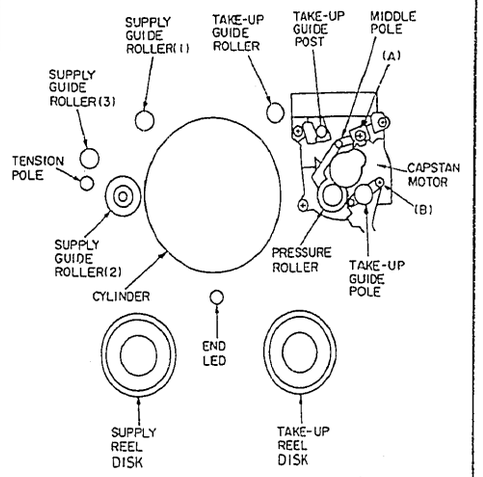


Fig. 3-9

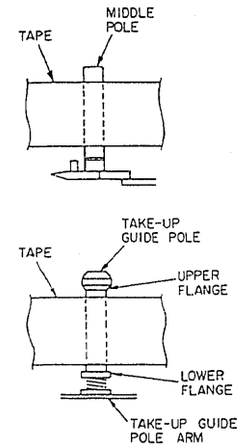


Fig. 3-10

3-6. SUPPLY GUIDE ROLLER (1)/TAKE-UP GUIDE ROLLER HEIGHT ADJUSTMENT (Figs. 3-7, 3-9, 3-11)

Be sure to perform this adjustment after reinstalling the supply guide roller (1) and take-up guide roller.

Note: The supply guide roller (1) and take-up guide roller are specified as service parts while they are assembled with their guide roller bases. Since they are coarsely adjusted before the unit is shipped from the factory, do not adjust their heights unnecessarily.

PURPOSE :
To set height relative to the cylinder.

FAULT DUE TO INCOMPLETE ADJUSTMENT:
The play back picture distorted.

TEST EQUIPMENT/JIG	*STATE OF VCR*	*TEST POINT*	*ADJUSTMENT POINT*
- Blank Tape - Alignment Tape - Oscilloscope - ATF Jig - ATF Adapter Jig	Connect the ATF jig (SW1:OFF, RT1:its mechanical center) via ATF adapter jig (SW1:OFF, SW2:VCR) to CN614.	- TP1 (SW30) ATF - TP2 (GND) ATF - TP3 (FM OUT) ATF - CN614 MAIN	

ADJUSTMENT PROCEDURE:

1) Load a blank tape and set the unit to the play mode.
2) Check that no curling or creasing of tape occurs around supply guide roller (1) and the take-up guide roller. If curling or creasing occurs, turn the tops of supply guide roller (1) and the take-up guide roller using a special driver to fine adjust their heights. (Fig. 3-9)
3) Connect an oscilloscope to TP3 on the ATF jig. (Fig. 3-7)
4) Trigger the oscilloscope with TP1 (SW30) on the ATF jig.
5) Load the alignment tape which was fully rewound and set the unit to the play mode.
6) Check that the FM output waveform at TP3 is flat. Set SW1 on the ATF jig to ON and turn RT1 to the left and right to check that the FM output level drops at an equal angle on the left and right. (Fig. 3-11)
7) If the specification in step 6) cannot be confirmed, turn the tops of supply guide roller (1) and the take-up guide roller using a special driver to adjust their heights so the specification in step 6) can be satisfied.

Note: To adjust the height of the supply guide roller (1), loosen the hexagonal screw holding the supply guide roller (1) on the supply guide roller (1) base.

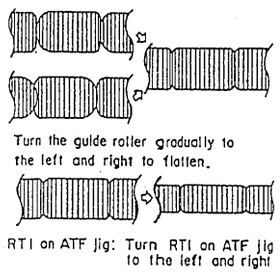


Fig. 3-11

4. ADJUSTMENT AFTER REPLACING THE CYLINDER (Figs. 3-7, 3-12)

When the cylinder is replaced, the height relative to the guide roller drifts, therefore the tape transport system should be adjusted.
Check and adjust in the following order.

PURPOSE :
To set the relative height of the guide rollers.

FAULT DUE TO INCOMPLETE ADJUSTMENT:
The played back picture is distorted.

TEST EQUIPMENT/JIG	*STATE OF VCR*	*TEST POINT*	*ADJUSTMENT POINT*
- Blank Tape - Alignment Tape - Oscilloscope - ATF Jig - ATF Adapter Jig	Connect the ATF jig (SW1:OFF, RT1:its mechanical center) via ATF adapter jig (SW1:OFF, SW2:VCR) to CN614.	- TP1 (SW30) ATF - TP2 (GND) ATF - TP3 (FM OUT) ATF - CN614 Main	

ADJUSTMENT PROCEDURE:

1) Load a blank tape and set the unit to the play mode.
2) Check that no curling or creasing of the tape occurs around the guide rollers. If curling or creasing of the tape occurs, fine adjust the height of the guide rollers.
3) Load an alignment tape and set the unit to the play mode.
4) Connect an oscilloscope to TP3 on the ATF jig. (Fig. 3-7)
5) Trigger the oscilloscope with TP1 (SW30) on the ATF jig.
6) Adjust voltage level control on the oscilloscope to set the maximum amplitude of the FM output to 4 graduations. (Fig. 3-12)
   Check that the FM output is flat at this time. Set SW1 on the ATF jig to ON and adjust RT1 to set the maximum amplitude of the FM output to 3 graduations. Check that the minimum amplitude is set to 1.8 graduations or more.
7) If the specifications in step 6) cannot be confirmed, adjust the heights of the supply and take-up guide rollers so the specifications are satisfied.
8) Perform the following electrical adjustments referring to CHAPTER 4.
   - Setting the Head Switching Point
   - Playback Luminance Signal Level Adjustment
   - Record Luminance Signal Level Adjustment
   - Record Chroma Signal Level Adjustment

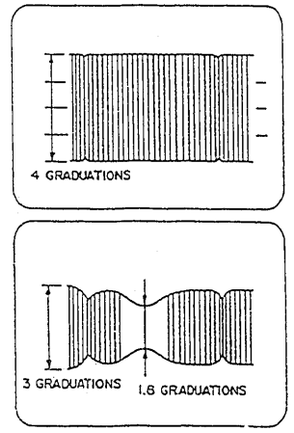


Fig. 3-12

5. CHECKING THE TORQUE

There are two (2) types of the cassette torque meter. Choose the one applicable for measurement to be performed.

- SRK-8T-132: Can measure torques other then the tension torque.
- SRK-8T-112: Can measure only the tension and play torques.

I T E M	*VCR MODE*	*MEASURED REEL DISK*	*TORQUE VALUE*	*TORQUE CASSETTE USED*
Take-up Torque	Play	Take-up	7 ~ 11 g-cm	SRK-8T-112
Rewind Torque	Reverse search to stop	Supply	20 ~ 34 g-cm	SRK-8T-132
Take-up Brake Torque	Reverse search to stop	Take-up	More than 10 g-cm	SRK-8T-112

CHAPTER 4
ELECTRICAL ADJUSTMENT

Note 1: Use a personal computer for camera adjustments other than the following.
- Subcarrier Frequency Confirmation
- Sensor Drive Pulse Frequency Confirmation
- Sensor Sub Voltage Adjustment

Note 2: The digital adjustment program for the camera is called the MAP (Manual Adjustment Program).

Note 3: DSP is an abbreviation for the digital signal processor.

1. CONNECTION FOR ADJUSTMENT

Remove the components, etc. listed below first, referring to CHAPTER 2 DISASSEMBLY. (See Fig. 4-1)

Note 1: It is not necessary to remove the front case when not performing the autofocus adjustment.

ORDER FOR REMOVING PARTS	*ITEM No.*
· Top Case, EVF Block	3-2-1
· (Front Case)	3-2-2

Note 2: When the EVF is removed, no operation mode is displayed on the monitor screen. Use an extension cable to connect the EVF to display operation modes on the monitor screen.

2. CAMERA SECTION ADJUSTMENT

2-1. CIRCUIT BOARD LOCATIONS AND ADJUSTMENT SERVICE POSITION

1. DC-DC Converter
2. Process Circuit Board
3. IC1003
4. Sensor Circuit Board
5. Autofocus Circuit Board
6. Autofocus Sub Circuit Board

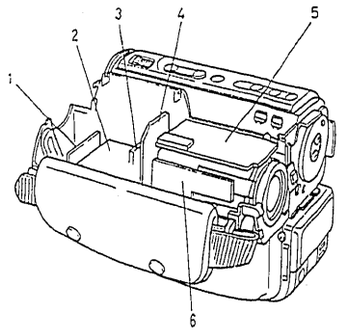


Fig. 4-2

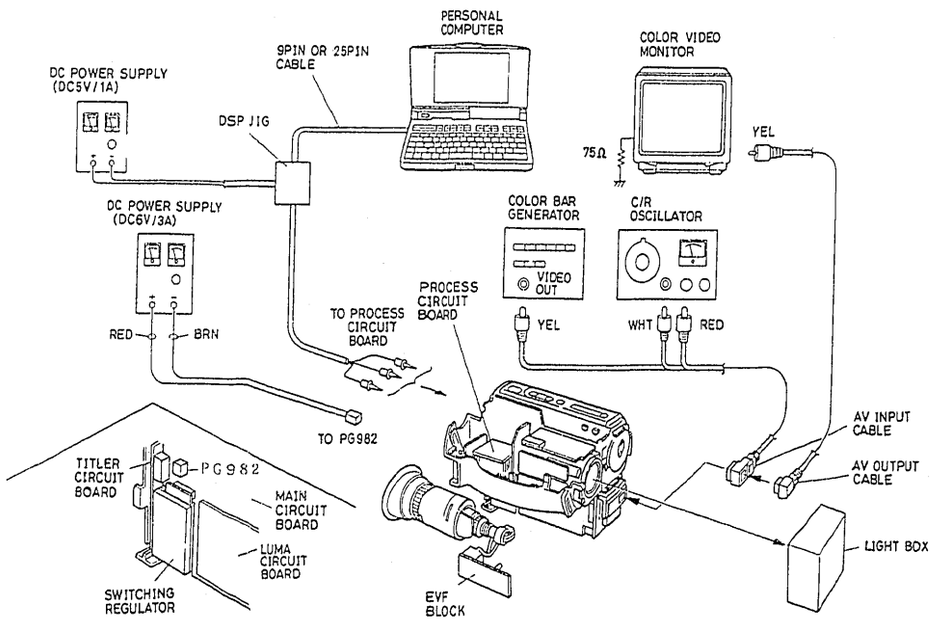


Fig. 4-1

2-2. TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT

- Test Equipment
  - Oscilloscope (dual trace)
  - (Vectorscope)
  - Digital Voltmeter (DVM)
  - Frequency Counter
  - Color Video Monitor
- Charts, etc.
  - Camera Adj. Floppy Disk
  - Personal Computer
  - Personal Computer 9-pin or 25-pin Cable
  - DSP Jig
  - Autofocus Adj. Jig-1
  - Autofocus Adj. Jig-2
  - Autofocus Adj. Jig-3
  - Autofocus Adj. Jig-4
  - Gray Scale Chart
  - Color Bar Chart
  - Resolution Chart
  - Backfocus Adjustment Chart
  - Autofocus Adjustment Chart
  - Light Box (3100°K)
  - Light Balancing Filter C12
  - DC Power Supply (DC6V/3A)
  - DC Power Supply (DC5V/1A)
  - Calculator

2-3. ADJUSTMENT CONDITION

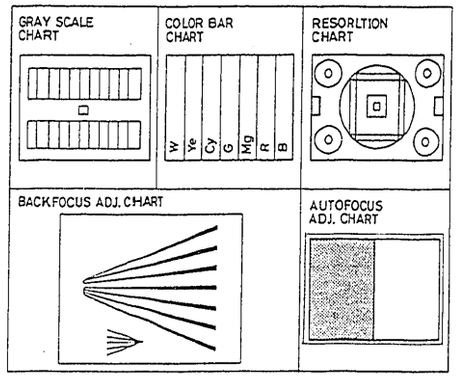
1) Check that the VCR section has been adjusted correctly before adjusting the camera section
2) Use a light box with minimum flickering. Control the color temperature of the light box strictly.
3) Connect this unit, a power supply and a color video monitor as shown in Fig. 4-1.
4) When using the video out(AV OUT) to perform adjustment, be sure to terminate the AV OUT jack with 75 ohms.
5) Place the chart (light box) 40cm away from the camera (lens surface) when otherwise not specified.
6) Point the camera at the chart to fill the video period when otherwise not specified.
7) Use the 10:1 probe of the oscilloscope when other not specified.
8) When "Trigger the oscilloscope internally" is specified, set the time base of the oscilloscope to 10μs/div.

2-4. PRESET POSITION OF SWITCHES AND CONTROLS DURING ADJUSTMENT

- Unit (twist switch) ... "CAMERA" position
- CAM/VCR ..... "CAM"
- MENU
  - AUDIO ..... <MAIN>
  - DATE ..... <DAY/TIME>
  - OSD ..... <ON>
  - WIND SW ..... <NOR>
- DATE ..... Not Display mode
- SHUTTER ..... "S60"(1/60 sec)
- FOCUS ..... "FOCUS M"
- TITLE ..... OFF mode
- ZOOM MODE ..... "ZM:1"

2-5. LIST OF CHARTS FOR CAMERA ADJUSTMENT

Table 4-1



2-6. ADJUSTMENTS AFTER REPLACING MAJOR COMPONENTS IN THE CAMERA BLOCK

After replacing major components, perform adjustments, referring to the table below. The following table shows the minimum adjustments required after major components are replaced.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Caution : When EEP ROM or the process circuit board is replaced, initialize the EEP ROM, referring to "2-8-3 Initial Setting by Model", then perform all the digital adjustments.

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS					
		SENSOR P.C.B	PROCESS P.C.B	DC-DC CON.	IC1001	IC1002	IC1003
CAMERA ANALOGUE ADJUSTMENT							
(1)	Sub Carrier Frequency Confirmation		●				
(2)	Sensor Drive Pulse Frequency Confirmation	●	●				●
(3)	Sensor Sub Voltage Adjustment	●		●	●		●
CAMERA DIGITAL ADJUSTMENT							
(1)	Auto Iris Control Adjustment		●	●			
(2)	Iris Calibration Adjustment		●	●			
(3)	Blue Matrix Adjustment	●	●		●		
(4)	White Balance Adjustment	●	●		●		
(5)	Chroma Gain Adjustment	●	●		●		
AUTOFOCUS ADJUSTMENT							
(1)	Zoom Trace Adjustment	●	●		●		
(2)	Autofocus Sensitivity Adjustment	●	●		●		

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS					
		IC1101	IC1102	IC1103	IC1104	IC1105	LENS BLOCK
CAMERA ANALOGUE ADJUSTMENT							
(1)	Sub Carrier Frequency Confirmation		●				
(2)	Sensor Drive Pulse Frequency Confirmation		●				
(3)	Sensor Sub Voltage Adjustment						
CAMERA DIGITAL ADJUSTMENT							
(1)	Auto Iris Control Adjustment					●	●
(2)	Iris Calibration Adjustment					●	●
(3)	Blue Matrix Adjustment					●	
(4)	White Balance Adjustment					●	
(5)	Chroma Gain Adjustment					●	
AUTOFOCUS ADJUSTMENT							
(1)	Zoom Trace Adjustment					●	●
(2)	Autofocus Sensitivity Adjustment	●	●	●		●	●

2-7. CAMERA ANALOGUE ADJUSTMENT

(1) Subcarrier Frequency Confirmation (Fig. 4-4)

PURPOSE	To set the subcarrier frequency to the specified value.				
INCOMPLETED PHENOMENON	No color appears.				
TEST POINTS		ADJUST POINTS		CONDITION	EQUIPMENT/JIG	SPECIFICATION
·TP1101 ·TP1304 (GND)	PC PC	·CT1101 (Fo ADJ)	PC		·Frequency Counter	14.318180MHz ± 80Hz

Note: Basically, it is not necessary to adjust the subcarrier frequency. Be sure to check the frequency before adjustment, and adjust to only when it is drifted.
1) Connect the frequency counter to TP1101.
2) Confirm that the frequency is 14.318180MHz ± 80Hz.
   If the frequency is drifted, adjust CT1101 on the process circuit board for 14.318180MHz ± 80Hz.
Note: Be careful when applying an adjustment driver to CT1101 because the stray capacitance the driver may vary.

(2) Sensor Drive Pulse Frequency Confirmation (Figs. 4-4, 4-5)

PURPOSE	To synchronize the sensor drive frequency with the horizontal sync signal.				
INCOMPLETED PHENOMENON	The picture is distorted.				
TEST POINTS		ADJUST POINTS		CONDITION	EQUIPMENT/JIG	SPECIFICATION
·TP1 ·TP1304 (GND)	TG PC	·CT1 (DRIVE PULSE LOCK VOLTAGE)	TG		·DVM	2.5V ± 0.1V

Note: Basically, it is not necessary to adjust the sensor drive pulse frequency. Be sure to check the voltage before adjustment, and adjust to only when it is drifted.
1) Connect the DVM to TP1.
2) Confirm that the voltage is 2.5V ± 0.1V.
   If the voltage is drifted, adjust CT1 on IC1003 for 2.5V ± 0.1V.
Note: Be careful when applying an adjustment driver to CT1 because the stray capacitance the driver may vary.

(3) Sensor Sub Voltage Adjustment (Figs. 4-3, 4-5)

PURPOSE	To suppress blooming.				
INCOMPLETED PHENOMENON	When a very bright subject is shot, a band of light (blooming) occurs at the top and bottom of the subject.				
TEST POINTS	ADJUST POINTS		CONDITION	EQUIPMENT/JIG	SPECIFICATION
	·RT1 (SENSOR SUB VOLTAGE)	TG	Point the camera at a 40W to 60W incandescent lump 1 meter away.	·Color Video Monitor	

1) Adjust RT1 so that the band of blooming appearing in the vertical direction of the monitor screen just disappears.
Note: Stop RT1 where blooming disappears and be careful not to turn it too for. Check that no roughness is present in the very bright section of the lamp.

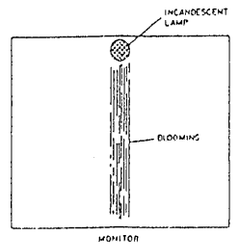


Fig. 4-3

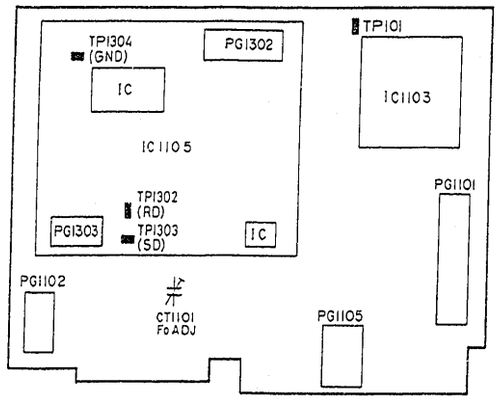


Fig. 4-4 PROCESS (PC) CIRCUIT BOARD (SIDE-A)

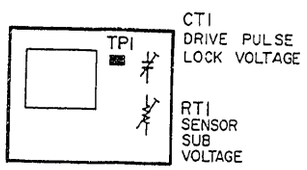


Fig. 4-5 IC1003 (TG) (SIDE-A)

2-8. CAMERA DIGITAL ADJUSTMENT

Note: The digital adjustment program for camera is called the MAP (Manual Adjustment Program).

2-8-1. Connections for Adjustment

Connect the camera/recorder, DSP jig, personal compute, power supply, etc. as shown in Fig. 4-6.

Note 1: Check that the camera/recorder is turned on.

Note 2: To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera recorder and jigs.

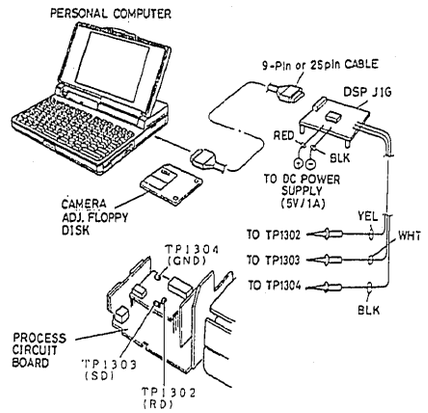


Fig. 4-6

2-8-2. How to Start the Adjustment Program (MAP)

Note: The following describes an example of the instructions of the personal computer and the menu display; they are different depending on the personal computer manufacturer and model.
Refer to the instruction manual of personal computer.

1) Turn the personal computer on and start the MS-DOS system. (Fig. 4-7)

Note: Refer to the instruction manual of the personal computer for how to start the computer.

2) Load the camera adjustment floppy disk into disk drive B and press B : then ENTER . (B may be small letter.) (Fig. 4-8)

Note: If the camera adjustment floppy disk is loaded into disk drive A, press A : then ENTER .

3) Press M A P _ I B M (SPACE) 1 then ENTER (MAP and IBM may be small letters). The digital adjustment program (MAP: Manual Adjustment Program) starts and the MAIN MENU shown Fig. 4-10 appears. (Figs. 4-9, 4-10)

Note: When you use a personal computer with two serial interface connectors and connect the DSP jig to serial interface connector 2, press MAP_IBM 2.

4) Select INITIALIZE EEPROM or ADJUSTMENT. If ESC (escape) is pressed, the display before the MAP starts (MS-DOS) is restored.
Refer to "2-8-3. Initial Setting by Model" for INITIALIZE EEPROM.
Refer to "2-8-4. Digital Adjustment Procedure" for ADJUSTMENT.

Note: Refer to "2-8-5. Error Messages" if an error massage is displayed.

```
F>
```

Fig. 4-7

LOAD THE CAMERA ADJ. FLOPPY DISK IN TO DISK DRIVE B

Press B : ENTER

```
F>B:
B>
```

Fig. 4-8

Press M A P _ I B M (SPACE) 1 ENTER

```
F>B:
B>MAP_IBM 1
```

Fig. 4-9

MAIN MENU

```
****************************************
************** MAIN MENU ***************
****************************************
          [A]    INITIALIZE
          [B]    ADJUSTMENT
          [ESC]  END
  Please select [A] or [B] or [ESC]
```

Fig. 4-10

2-8-3. Initial Setting by Model

Note: This item describes how to initialize the EEP ROM. Be sure to perform this item after replacing EEP ROM or the process circuit board. When other components are replaced, normally, it is not necessary to initialize the EEP ROM. Press [ESC] (escape) to return the computer's display to MAIN MENU.

1) Start the MAP, referring to "2-8-2. How to Start the Adjustment Program (MAP)".
2) Press [A] to select INITIALIZE. (Figs. 4-12, 4-13)
3) Select the number according to the model. (Figs. 4-11, 4-13)

Note: There are two ways to initialize the VM-E25A depending on the crystal filter used in the VM-E25A. Check blue marking on the sensor plate and then select [2] or [3].
- ·With blue marking: Select [2] (VM-E25(1))
- ·Without blue marking: Select [3] (VM-E25(2))

If you select number without a model name by mistake, the message shown in Fig. 4-16 will appear in the computer's display. Press any key to return the display to Fig. 4-13 (INITIALIZE MENU).

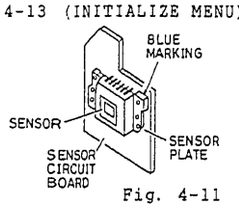


Fig. 4-11

Note: If there are more than 5 models and [P] is pressed, the computer's display changes to the next page.

Note: If [ESC] (escape) is pressed, the computer's display returns to Fig. 4-12 (MAIN MENU).

4) If there are no abnormalities in the camera/recorder, the message shown in Fig. 4-14 is displayed in the computer's display for a while, and then the message informing you that the initial setting has been completed (shown in Fig. 4-15) is displayed.
5) If the message shown in Fig. 4-15 appears in the computer's display, press any key. The computer's display returns to Fig. 4-13 (INITIALIZE MENU).
6) Now, the initial setting of the EEP ROM has been completed. Press [ESC] (escape) to return the computer's display to Fig. 4-12 (MAIN MENU). Perform all digital adjustments, referring to "2-8-4. Digital Adjustment Procedure".

Note: If an error message appears in the computer's display, refer to "2-8-5. Error Massages". If a key is pressed after the error message appears, the computer's display returns to the INITIALIZE MENU (Fig. 4-13)

MAIN MENU

```
****************************************
************* MAIN MENU ****************
****************************************

          [A]    INITIALIZE
          [B]    ADJUSTMENT
          [ESC]  END

   Please select [A] or [B] or [ESC]
```

Fig. 4-12

↓ Press [A]

INITIALIZE MENU

```
****************************************
************ INITIALIZE ****************
****************************************

      [1]     VM-4400A
      [2]     VM-E25A (1)
      [3]     VM-E25A (2)
      [4]     XXXXXX
      [5]     XXXXXX
      [P]     NEXT SELECTION
      [ESC]   RETURN TO MAIN MENU

    Please select the type of set
    Hit [1] - [5] or [P] or [ESC]
```

Fig. 4-13

↓ Press [2] or [3]

```
NOW INITIAL SETTING !!
Please wait a moment
```

Fig. 4-14

↓

```
COMPLETED INITIAL SETTING !!
**** HIT ANY KEY ****
```

Fig. 4-15

↓ Press any key to return to Fig. 4-13

↓ Press [ESC] to return to Fig. 4-12

MESSAGE WHEN OPERATED BY MISTAKE

```
Can not find the DATA FILE
**** HIT ANY KEY ****
```

Fig. 4-16

ERROR MESSAGE

```
CAN'T WRITE TO EEPROM
Check the wiring or change the EEPROM
**** HIT ANY KEY ****
```

Fig. 4-17

2-8-4. Digital Adjustment Procedure

Note 1: When EEP ROM or the process circuit board is replaced, initialize the EEP ROM, referring to "2-8-3. Initial Setting By Model" then perform all the digital adjustment.

Note 2: When an error message appears during adjustment, refer to "2-8-5. Error Messages". If a key is pressed after an error massage appears, the ADJUSTMENT MENU restored.

1) Start the MAP, referring to "2-8-2. How to Start the Adjustment Program (MAP)"
2) Press [B] to select ADJUSTMENT. (Figs. 4-21, 4-22)
3) Select the number of the required adjustment.

Note 3: If [ESC] (escape) is pressed, the computer's display returns to Fig. 4-21 (MAIN MENU).

Note 4: To complete adjustment, press the [ESC] (escape) key twice to resstore the MS-DOS screen and then turn off the camra/recorder and jig.

(1) Auto Iris Control Adjustment (Figs. 4-23 - 4-27)

Note: This adjustment is performed automatically, When the auto iris control adjustment is specified, the personal computer adjusts it automatically.

PROPOSE	To set the brightness of picture.
INCOMPLETED PHENOMENON	·A block subject with low illumination is raised. ·A black subject with low illumination is depressed.
EQUIPMENT/JIG	(Oscilloscope)
CONDITION	Point at a light box without a chart inserted.
PROCEDURE	

1) Press [1] to select the auto iris control adjustment. (Fig. 4-24)
2) If there is no abnormality in the camera/recorder, the message shown in Fig. 4-25 is displayed in the computer's display for a while, and then message shown in Fig. 4-26 appears.
3) After the computer's display changes from Fig. 4-26 to Fig. 4-27, press any key to return the display to Fig. 4-24. Now, the auto iris control adjustment is complete.

Check: Connect an oscilloscope to the video output (AV OUT) and check that the waveform level is 514mV ± 70mV. (Fig. 4-23)

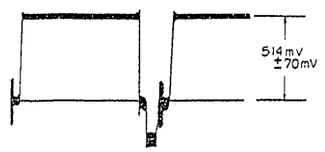


Fig. 4-23

MAIN MENU

```
****************************************
************* MAIN MENU ****************
****************************************

          [A]    INITIALIZE
          [B]    ADJUSTMENT
          [ESC]  END

   Please select [A] or [B] or [ESC]
```

Fig. 4-21

↓ Press [B]

ADJUSTMENT MENU

```
****************************************
************ ADJUSTMENT ****************
****************************************

      [1]   AUTO IRIS CONTROL
      [2]   IRIS CALIBRATION
      [3]   BLUE MATRIX
      [4]   WHITE BALANCE
      [5]   CHROMA GAIN
      [ESC] RETURN TO MAIN MENU

   Please select [1] - [5] or [ESC]
```

Fig. 4-22

ADJUSTMENT MENU

```
****************************************
************ ADJUSTMENT ****************
****************************************

      [1]   AUTO IRIS CONTROL
      [2]   IRIS CALIBRATION
      [3]   BLUE MATRIX
      [4]   WHITE BALANCE
      [5]   CHROMA GAIN
      [ESC] RETURN TO MAIN MENU

   Please select [1] - [5] or [ESC]
```

Fig. 4-24

↓ Press [1]

```
AUTO IRIS CONTROL ADJUSTING
Please wait a moment
```

Fig. 4-25

↓

```
VIDEO LEVEL DATA WRITING TO EEPROM
```

Fig. 4-26

↓

```
COMPLETED WRITING EEPROM
**** HIT ANY KEY ****
```

Fig. 4-27

↓ Press any key

↓ Returns to ADJUSTMENT MENU (Fig. 4-24)

(2) Iris Calibration Adjustment
(Figs. 4-28 - 4-31)

Note: This adjustment is performed automatically. When the Iris Calibration Adjustment is specified, the personal computer adjusts it automatically

PROPOSE	To detect the F number correctly.
INCOMPLETED PHENOMENON	·The iris operation becomes unstable. ·AGC, program AE and Auto white does not operate normally.
EQUIPMENT/JIG	———
CONDITION	·Attach a C12 filter. ·Point the camera at the light box without a chart to fill the screen (at wide-angle).
PROCEDURE	

1) Press [2] to select the iris calibration adjustment. (Fig. 4-28)
2) If there is no abnormality in the camera/recorder, the massage shown in Figs. 4-29 and 4-30 are displayed in the computer's display for a while, and then the message shown in Fig. 4-31 appears.
3) Now, the iris calibration adjustment is complete.
Press any key to return the computer's display to Fig. 4-28.

ADJUSTMENT MENU

```
**************************************
************* ADJUSTMENT *************
**************************************

        [1]   AUTO IRIS CONTROL
        [2]   IRIS CALIBRATION
        [3]   BLUE MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU

   Please select [1] - [5] or [ESC]
```

Fig. 4-28

↓

Press [2]

↓

```
IRIS CALIBRATION ADJUSTING
Please wait a moment
```

Fig. 4-29

↓

```
HALL DATA WRITING TO EEPROM
```

Fig. 4-30

↓

```
COMPLETED WRITING EEPROM
**** HIT ANY KEY ****
```

Fig. 4-31

↓

Press any key

↓

Return to ADJUSTMENT MENU (Fig. 4-28)

(3) Blue Matrix Adjustment
(Figs. 4-32 - 4-36)

PROPOSE	To compensate for uneveness in the chroma signal.
INCOMPLETED PHENOMENON	Color reproduction becomes defective.
EQUIPMENT/JIG	Oscilloscope
CONDITION	Point at a color bar chart.
PROCEDURE	

1) Press [3] to select the blue matrix adjustment. (Fig. 4-33)
2) Connect an oscilloscope to the video output (AV OUT).
3) Press the [D] key to minimize the yellow amplitude, and then press the [U] key to adjust the yellow amplitude so its ration to the blue amplitude is 1:3.
4) Press the [ENTER] key to write data to EEP ROM and then press any key to return the computer's display to Fig. 4-33.

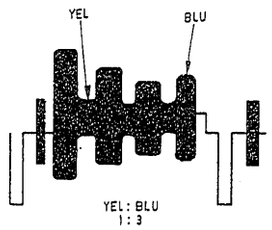


Fig. 4-32

ADJUSTMENT MENU

```
**************************************
************* ADJUSTMENT *************
**************************************

        [1]   AUTO IRIS CONTROL
        [2]   IRIS CALIBRATION
        [3]   BLUE MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU

   Please select [1] - [5] or [ESC]
```

Fig. 4-33

↓

Press [3]

↓

```
BLUE MATRIX ADJUST MODE SETTING
Please wait a moment
```

Fig. 4-34

↓

```
BLUE MATRIX ADJUSTMENT
[U]       UP
[D]       DOWN
[ENTER]   RETURN TO MENU
```

Fig. 4-35

↓

Press [ENTER]

↓

```
BLUE MATRIX DATA WRITING TO EEPROM
```

Fig. 4-35-1

↓

```
COMPLETED WRITING EEPROM
**** HIT ANY KEY ****
```

Fig. 4-36

↓

Press any key, return to ADJUSTMENT MENU (Fig. 4-33)

(4) White Balance Adjustment
(Figs. 4-37 - 4-43)

PROPOSE	To set white balance under the color termperature which becomes a reference for the auto white balance circuit.
INCOMPLETED PHENOMENON	·Color of the subject is different from that of the picture. ·A white subject is not seen as white.
EQUIPMENT/JIG	·Oscilloscope (Vectorscope)
CONDITION	·Attach a C12 filter. ·Point at a gray scale chart.
PROCEDURE	

1) Press [4] to select the white balance adjustment. (Fig. 4-39)

When using an oscilloscope (Fig. 4-37)
2) Connect an oscilloscope to the video output (AV OUT).
3) Press the [U], [D], [L] and [R] keys to minimize carrier components in the waveform. (Fig. 4-41)
4) After minimizing the carrier components, press the [U] key 10 times.
5) Press the [ENTER] key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 4-39.

When using a vectorscope (Fig. 4-38)
2) Connect a vectorscope terminated with 75 ohms to the video output (AV OUT).
3) Press the [U], [D], [L] and [R] keys so the bright spot comes to the center of the vectorscope. (Fig. 4-41)
4) After centering the bright spot, press the [U] key 10 times.
5) Press the [ENTER] key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 4-39.

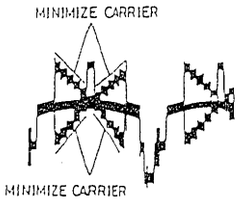


Fig. 4-37

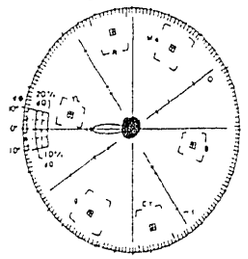


Fig. 4-38

ADJUSTMENT MENU

```
**************************************
************* ADJUSTMENT *************
**************************************

        [1]   AUTO IRIS CONTROL
        [2]   IRIS CALIBRATION
        [3]   BLUE MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU

   Please select [1] - [5] or [ESC]
```

Fig. 4-39

↓

Press [4]

↓

```
WHITE BALANCE ADJUST MODE SETTING
Please wait a moment
```

Fig. 4-40

↓

```
WHITE BALANCE ADJUSTMENT
[U]       RED-GAIN UP
[D]       RED-GAIN DOWN
[R]       BLUE-GAIN UP
[L]       BLUE-GAIN DOWN
[ENTER]   RETURN TO MENU
```

Fig. 4-41

↓

Press [ENTER]

↓

```
WHITE BALANCE DATA WRITING TO EEPROM
```

Fig. 4-42

↓

```
COMPLETED WRITING EEPROM
**** HIT ANY KEY ****
```

Fig. 4-43

↓

Press any key

↓

Return to ADJUSTMENT MENU (Fig. 4-39)

(5) Chroma Gain Adjustment
(Figs. 4-44 - 4-50)

PROPOSE	To set the color saturation under the reference color temperature.
INCOMPLETED PHENOMENON	·Color of the picture is denser than that of the subject. ·Color of the picture is lighter that of the subject.
EQUIPMENT/JIG	·Oscilloscope (Vectorscope)
CONDITION	·Attach a C12 filter. ·Point at a color bar chart
PROCEDURE	

1) Press [5] to select the chroma gain adjustment. (Fig. 4-46)

When using an oscilloscope (Fig. 4-44)
2) Connect an oscilloscope to the video output (AV OUT).
3) Press the [U] and [D] keys to set the red level to 440mV ± 30mV. (Fig. 4-48)
4) Press the [ENTER] key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 4-46.

When using a vectorscope (Fig. 4-45)
2) Connect a vectorscope terminated with 75 ohms to the video output (AV OUT).
3) Press the [U] and [D] keys so the red vector is 155% ± 10%. (Fig. 4-48)
4) Press the [ENTER] key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 4-46.

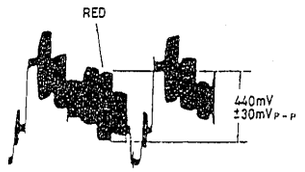


Fig. 4-44

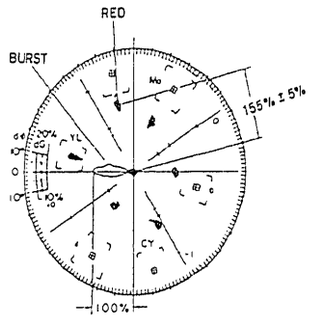


Fig. 4-45

ADJUSTMENT MENU

```
**********************************
************ ADJUSTMENT ************
**********************************

        [1]    AUTO IRIS CONTROL
        [2]    IRIS CALIBRATION
        [3]    BLUE MATRIX
        [4]    WHITE BALANCE
        [5]    CHROMA GAIN
        [ESC]  RETURN TO MAIN MENU

   Please select [1] - [5] or [ESC]
```

Fig. 4-46

↓ Press [5] ↓

```
CHROMA GAIN ADJUST MODE SETTING

Please wait a moment
```

Fig. 4-47

↓

```
CHROMA GAIN ADJUSTMENT

[U]       UP
[D]       DOWN
[ENTER]   RETURN TO MENU
```

Fig. 4-48

↓ Press [ENTER] ↓

```
CHROMA GAIN DATA WRITING TO EEPROM
```

Fig. 4-49

↓

```
COMPLETED WRITING EEPROM
**** HIT ANY KEY ****
```

Fig. 4-50

↓ Press any key ↓

Return to ADJUSTMENT MENU (Fig. 4-46)

2-8-5. Error Messages

When an error massage is displayed during adjustment, press any key to return the computer's display to the initial setting or adjustment menu and then investigate the cause of the error.

(1) Error Message No. 1

```
ERROR !!
CAN'T WRITE TO EEPROM
Check the wiring or change the EEPROM
**** HIT ANY KEY ****
```

Fig. 4-61

(1) Error message displayed when EEP ROM is initialized and during whole adjustment.
Major Causes
1. EEP ROM is faulty.
2. DSP μP is faulty.
3. Data line between DSP μP and EEP ROM is faulty.
4. DSP jig is faulty.

(2) Error Message No. 2

```
ERROR !!
BAD LIGHT CONDITION !
**** HIT ANY KEY ****
```

Fig. 4-62

(2) Error massage displayed during auto iris control and iris calibration adjustments.
Countermeasures
1. Check that the brightness (also the color temperature) of the light box dose not decrease.
2. Adjust the number of color temperature conversion filters.

(3) Error Message No. 3

```
ERROR !!
IRIS HALL DEVICE BE DEFECTIVE
**** HIT ANY KEY ****
```

Fig. 4-63

(3) Error message displayed during auto iris control and iris calibration adjustments.
Major Causes
1. The connection of the iris block is faulty.
2. Iris block (Hall device) is faulty.

(4) Error Message No. 4

```
ERROR !!
MAY BE DEVICE ON THE SET IS BROKEN
**** HIT ANY KEY ****
```

Fig. 4-64

(4) Error message displayed during auto iris control and iris calibration adjustments.
Major Causes
1. Data line is faulty.
2. The video signal processor (including the VCR block) is faulty.
3. DSP jig is faulty.
4. Adjustment program (MAP) is faulty.

2-9. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT

(1) Deflection Yoke Position Adjustment (Fig. 4-71)

PURPOSE	This adjustment procedure eliminates picture tilt in the EVF display.			
TEST POINTS	*ADJUST POINTS*	*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
	·DEFLECTION YOKE	Aim the resolution chart.	·EVF Display	

1) Loosen the deflection yoke nut.
2) Turn the deflection yoke so that the EVF picture (chart) is horizontal, matching the edges of the CRT.

Note: After adjustment is completed, tighten the deflection yoke nut.

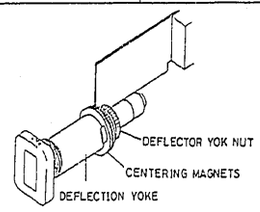


Fig. 4-71

(2) EVF Centering Adjustment (Fig. 4-71)

PURPOSE	This adjustment centers the image observed by the camera in the EVF display.			
TEST POINTS	*ADJUST POINTS*	*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
	·CENTERING MAGNETS	Aim the resolution chart.	·EVF Display	

1) Remove the locking paint from the centering magnet.
2) Adjust the centering magnets until the center of the picture viewed by the camera is positioned in the center of the EVF display.

(3) EVF Vertical Size Adjustment (Fig. 4-72)

PURPOSE	This adjustment determines the vertical size of the image appearing in the EVF display				
TEST POINTS	*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
	·RT802 (V. SIZE)	EVF	Aim the resolution chart.	·EVF Display	

1) Adjust RT802 so that the top and bottom edges of the chart match the top and edges of the CRT.

(4) EVF Brightness Adjustment (Fig. 4-72)

PURPOSE	This adjustment sets the brightness of the picture in the EVF display.				
TEST POINTS	*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
	·RT805 (BRIGHT)	EVF	Aim the resolution chart.	·EVF Display	

1) Adjust RT805 to optimize the EVF picture.

(5) EVF Focus Adjustment (Fig. 4-72)

PURPOSE	This control adjusts for optimum focus of the electronic viewfinder picture.				
TEST POINTS	*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
	·RT803 (FOCUS)	EVF	Aim the resolution chart.	·EVF Display	

1) Adjust RT803 so that the EVF picture is clear.

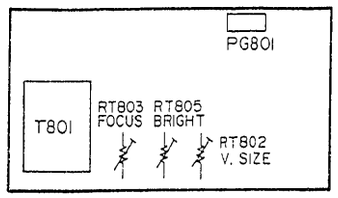


Fig. 4-72 Electrical Adjustment (EVF) Circuit Board (Parts Side)

2-10. AUTOFOCUS ADJUSTMENT

Note 1: After replacing components in the video signal processor, be sure to perform the check items in adjustments and perform adjustment only when an abnormality is detected.
Do not perform adjustment unnecessarily.

Note 2: Before starting autofocus adjustment, be sure to perform "2-10-1. Judgement Whether Autofocus is Good or Bad". Perform adjustment only when it is judged that the adjustment is faulty (all signals are normal and autofocus operation is abnormal).

2-10-1. Judgement Whether Autofocus is Good or Bad

Observe the test points (signals) on the autofocus circuit board, referring to the table below. If all signals are normal, autofocus is defective.

Table 4-81

TEST POINT	SIGNAL	TYPE OF SIGNAL	FUNCTION
TP38 (CN01AF-1)	RESET 5V	DC 5V	Resets the autofocus circuit. Goes 0V instantaneously when power is supplied.
TP2 (CN01AF-2)	UNREG	DC 6V	Motor drive power supply. Always DC 6V.
TP3 (CN01AF-3)	VD	PULSE	Negative vertical sync pulse (5.0Vp-p)
TP4 (CN01AF-4)	HD	PULSE	Negative horizontal sync pulse (5.0Vp-p)
TP5 (CN01AF-5)	GND (P)	0V	Ground of motor drive power supply
TP6 (CN01AF-6)	GND (P)	0V	Ground of motor drive power supply
TP7 (CN01AF-7)	9V	DC 9V	DC 9V power supply. Always DC 9V
TP8 (CN01AF-8)	5V	DC 5V	DC 5V power supply. Always DC 5V
TP50 (CN01AF-9)	GND (S)	0V	Ground of video signal system
TP10 (CN01AF-10)	Y SIGNAL	Y SIGNAL	Luminance (Y) signal (1.0Vp-p)
TP11 (CN01AF-11)	AF/MF	DC 5V/0V	Focus auto/manual switching SIGNAL. Auto:DC 5V, Manual:0V
TP12 (CN01AF-12)	FAR	DC 5V/0V	DC 5V when focus is manually operated in the infinity direction, and 0V in other modes
TP13 (CN01AF-13)	NEAR	DC 5V/0V	DC 5V when focus is manually operated in the closeup direction, and 0V other modes
TP14 (CN01AF-14)	GND (D)	0V	Ground of digital signal system
TP15 (CN01AF-15)	CLOCK	AC	3.5MHz sine wave (300mVp-p)
TP16 (CN01AF-16)	TELE	DC 5V/0V	0V when zoom switch T is pressed, and DC 5V in other modes.
TP17 (CN01AF-17)	WIDE	DC 5V/0V	0V when zoom switch W is pressed, and DC 3V in other modes.
TP18 (CN01AF-18)	F DET	DC 5V/0V	0V in bright place, and DC 5V in dark places
TP19 (CN01AF-19)	ZOOM	DC 1-4V	DC 1V when zoom is set to telephoto end, and DC 4V when it is set to wide-angle end
TP20 (CN01AF-20)	FLICK	DC 5V/0V	0V when flickering is deteted, and DC 5V in other modes.

Note: the position of TP21, TP22 and TP23 on the autofocus circuit board are different depending on the part number of the circuit board. Check the part number indicated on the autofocus circuit board and refer to Table 4-82 to find the positions of TP21, TP22 and TP23.

Table 4-82

PART No. / POINT	C	D	E
TP X	TP22	TP21	TP21
TP Y	TP21	TP23	TP23
TP Z	TP23	TP22	TP22

Example: 108AFC
└ Part Number

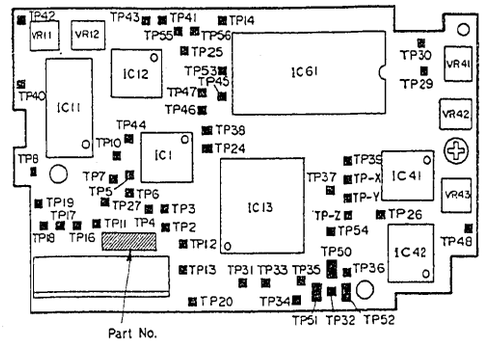
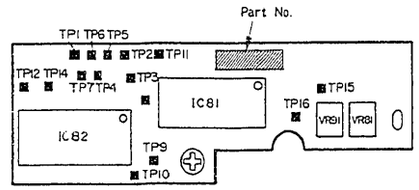


Fig. 4-81 Autofocus (AF) Circuit Board (Side-A)



Note: Do not adjust VR91.

Fig. 4-82 Autofocus Sub (AF S) Circuit Board (Side-A)

2-10-2. Connection for Adjustment

Connect the camera/recorder, power supply, jig, etc. as shown in Fig. 4-83.

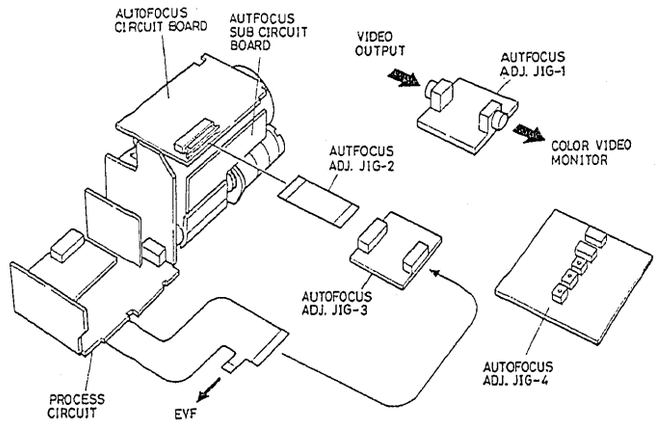


Fig. 4-83

2-10-3. Autofocus Adjustment Method

Note: Prepare a calculator for autofocus adjustment because complicated calculations must be performed.

(1) Zoom Trace Adjustment (Figs. 4-81, 4-82)

Note: This adjustment requires high precision. Measure and calculate voltages using 1 mV units.

PURPOSE	To set the relative distance between the image sensor and lens to the specified value.
INCOMPLETED PHENOMENON	·A subject becomes conspicuously out of focus when zooming from the telephoto end to the wide-angle end. ·A subject that is focused at the telephoto end is out of focus at the wide-angle end.

TEST POINTS		*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·TP21	AF	·VR41 (AF ADJ 41)	AF	Install the back-focus adjustment chart illuminated by 100 lux, 75cm away from the lens.	·DVM ·Autofocus Adj. Jigs 1-4	
·TP22	AF					
·TP23	AF	·VR42 (AF ADJ 42)	AF			
·TP33	AF					
·TP34	AF	·VR43 (AF ADJ 43)	AF			
·TP39	AF					
·TP50 (GND)	AF	·VR81 (AF ADJ 81)	AF S			

1) Check that the backfocus adjustment chart is not tilted with respect to the lens.
2) Set the MAN/AUTO switch on autofocus adj. (AF ADJ) jig-4 to "MAN".
3) Press the RESET switch on AF ADJ jig-4.
4) Connect the IC clip of AF ADJ jig-4 momentarily to TP39.
5) Press the TELE switch 2 times on the AF ADJ jig-4.
6) Set the MAON/AUTO switch on AF ADJ jig-4 to "AUTO".
7) Check the numeral stamped on the metal under the autofocus sub circuit board. The stamp shows a voltage. The highest is an integer.

   Example: When 424 is stamped, the voltage is 4.24V.
   When 4235 is stamped, the voltage is 4.235V.

   Assume that this voltage is "S".

8) Measure the voltage at TP21. Assume that the measurement value is "X".
9) Measure the voltage at TP23. Assume that the measurement value is "Z".
10) Use the values obtained up to step 9) to perform calculation 1 and calculate voltage "R".

    Calculation 1: R = S x ((X - Z)/5)

11) Press the WIDE switch on AF ADJ jig-4 and hold it to set the zoom to the wide-angle end.

12) Press the TELE switch on AF ADJ jig-4 and hold it for approx. 0.5 seconds until the zoom starts to move.
    Measure the voltage at TP22 at this time. Assume that this voltage is "W".
13) Adjust VR81 so the focus is optimum.
14) Use the values obtained up to step 13) to perform calculation 2 and calculate voltage "M".

    Calculation 2: M = W - ((1000-182)/1000) × R

15) Press the TELE switch on AF ADJ jig-4 little by little to adjust so the voltage at TP22 becomes "M" (obtained by calculation 2) ± 2mV. If the TELE switch is pressed too much and the voltage drifts from "M" ± 2mV, press the WIDE switch on AF ADJ jig-4 to shift the zoom a long way in the wide-angle direction and then press the TELE switch to perform re-adjustment.
16) Press the NEAR switch on AF ADJ jig-4 and hold it, then adjust VR43 so the focus is optimum.
17) Press the FAR switch on AF ADJ jig-4 and hold it, then press the TELE switch on AF ADJ jig-4 so the focus is optimum.
    If the TELE switch is pressed too much and the focus that has already been obtained drifts, press the WIDE switch on AF ADJ jig-4 to shift the zoom a long way in the wide-angle direction and then press the TELE switch to perform re-adjustment.
18) Measure the voltage at TP22. Assume that the voltage is "T".
19) Use the value obtained up to step 18) to perform judgement 1 and perform adjustment following the instructions below.
    1) If the above judgement is satisfied, proceed to step 21).
    2) If the above judgement is not satisfied, perform step 20) and then re-adjust step 13) - 19). Perform steps 13) - 20) repeatedly until the judgement is satisfied.

Judgement NG:

20) Press the WIDE switch on AF ADJ jig-4 and hole it so the zoom is set to the wide-angle end, then perform calculation 3 to calculate voltage "W".

    Calculation 3: W = T + R

    Press the TELE switch on AF ADJ jig-4 little by little to adjust so the voltage at TP22 becomes "W" (obtained by calculation 3) ± 2mV. If the TELE switch is pressed too much and the voltage drifts from W ± 2mV, press the WIDE switch on AF ADJ jig-4 to shift the zoom a long way in the wide-angle direction and then press the TELE switch to perform re-adjustment.
    Assume that this voltage at TP22 is "W". Return to step 13).

Judgement OK:

21) Measure the voltage at TP33. Assume that this voltage is "H".
22) Measure the voltage at TP34. Assume that this voltage is "L".
23) Use the voltage obtained up to step 22) to perform calculation 4 and calculate voltages "A", "B", "E" and "F".

    Calculation 4: A = ((H - L)) × 4/1023) + L
    B = ((H - L)) × 1004/1023) + L
    E = A - ((B - A) × (T - Z)/R)
    F = B + ((B - A) × (X - T- R)/R)

24) Adjust VR42 so the voltage at TP23 is "E" (obtained by calculation 4) ± 1mV.
25) Adjust VR41 so the voltage at TP21 is "F" (obtained by calculation 4) ± 1mV.
26) Press the RESET switch on the AF ADJ jig-4 or disconnect the jig and turn the power off to release the zoom track adjustment mode.
27) Now, the adjustment is completed. Perform the following zoom trace check.

Check

Note: Checking is possible without connecting a jig. Connect the camera/recorder normally.

1) Turn the camera/recorder on and set the focus to the manual mode.
2) Set the zoom to the telephoto end and point the camera/recorder at a dark subject indoors from as far a position as possible.
3) Set the focus to the infinity end (∞) and check that the subject is focused when the focus reaches the infinity end or it is focused before the focus reaches the infinity end and then the focus drifts when it reaches the end.
   While the above subject is being shot, set the zoom to the wide-angle end and check that the focus does not drift conspicuously.
   Also check that the focus is obtained when the subject is focused manually at the wide-angle end.
   If the above confirmations cannot be obtained, re-adjust the zoom trace.

(2) Autofocus Detection Sensitivity Adjustment (Figs. 4-84 - 4-87)

PURPOSE		To set the autofocus detection sensitivity .			
INCOMPLETED PHENOMENON		·Focus is operated by a slight panning or zooming and stops. ·It takes time until a subject is brought into focus.			
TEST POINTS		*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·TP39 ·TP51 ·TP52 ·TP50 (GND)	AF AF AF AF	·VR11 (AF ADJ 11) ·VR12 (AF ADJ 12)	AF AF	Install the autofocus adjustment chart illuminated by 100 lux, 2 - 3m away from the lens	·DVM ·Autofocus Adj. jig-1 - 4 ·Oscilloscope ·Color Video Monitor	

1) Connect the test pin cord of autofocus adjustment (AF ADJ) jig-1 to TP52.
2) Check that a black square frame is displayed on the color video monitor.
3) Set the zoom to the telephoto end.
4) Set the MAN/AUTO switch on the AF ADJ jig-4 to "MAN" and bring the chart into focus.
5) Short TP39 and TP50 (GND) momentarily.
6) Press the NEAR switch on the AF ADJ jig-4 momentarily.
7) Adjust the direction of the camera/recorder so the picture displayed on the color video monitor is as shown in Fig. 4-84.
8) Connect an oscilloscope to TP51.
9) Set the oscilloscope to the internal sync mode.
10) Adjust VR12 so that level A of the waveform is 0.4V. (Fig. 4-85)
11) Press the FAR switch on the AF ADJ jig-4 momentarily.
12) Adjust the direction of the camera/recorder so the picture displayed on the color video monitor is as shown in Fig. 4-86.
13) Adjust VR11 so that level A of the waveform is 0.3V. (Fig. 4-85)
14) Adjust the direction of the camera/recorder so the picture displayed on the color video monitor is as shown in Fig 4-87, and check that level A of the waveform is 0.1V or less. If it is more than 0.1V, adjust VR11 so that it becomes 0.08V.
15) Shade the front surface of the lens (cap the lens) and check that level A of the waveform is 0.1V or less. When it is more than 0.1V, adjust VR11 so that it becomes 0.08V.
16) Press the RESET switch on the AF ADJ jig-4 or disconnect the jigs and turn the power off to release the adjustment mode.
17) Now, the adjust is completed. perform the following autofocus direction sensitivity check.

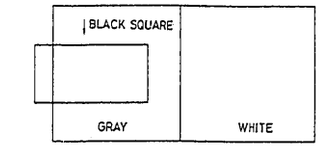


Fig. 4-84

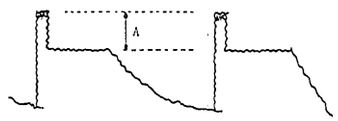


Fig. 4-85

Check

1) Set the focus to auto and adjust the direction of the camera/recorder so the picture displayed on the color video monitor is as shown in Fig. 4-86.
   Check that the chart is in focus.
2) Display the picture on the color video monitor as shown in Fig. 4-87 and check that the focus moves a little after and stops.
   If the above confirmation cannot be obtained, re-adjust the autofocus detection sensitivity.

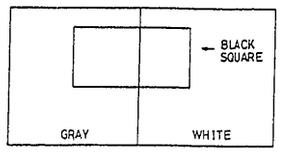


Fig. 4-86

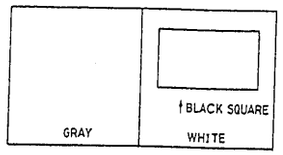


Fig. 4-87

3. VCR SECTION ADJUSTMENT

3-1. CIRCUIT BOARD LOCATIONS AND SERVICING POSITION

Adjustments other than "setting the Power Shut Off Level" can be done with the unassembled VCR block.
It is not necessary to set the camera/recorder to the test mode.
To set the camera/recorder to the eject state, connect the ATF adapter jig to CN614 on the main circuit board and set SW2 on the ATF adapter jig to "CAMERA".

(1) Servicing Position

Note: Adjustments other than for the audio circuit can done in the state as shown in Fig. 4-101. When adjusting the audio circuit, refer to CHAPTER 2 DISASSEMBLY and disassemble the unit up to the state shown in Fig. 3-B.

1. Luma Circuit Board
2. Jack Circuit Board
3. Main Circuit Board
4. Function Switch Block
5. Titler Circuit Board
6. Switching Regulator Block

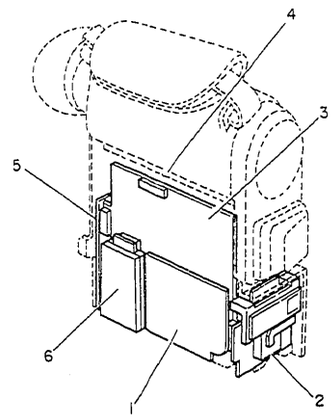


Fig. 4-101

3-2. TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT

- Test Equipment
  Oscilloscope (dual trace)
  Digital Voltmeter (DVM)
  Frequency Counter
  Millivoltmeter
  Color Video Monitor
  Color Bar Generator
  C/R Oscillator
- Alignment Tape, etc.
  Alignment Tape (20HSC-2)
  Blank Tape
  ATF Jig
  ATF Adapter Jig
  DC Power Supply (DC 0~7V/3A)

3-3. ADJUSTMENT CONDITION

1) Check that the camera section has been adjusted correctly before adjusting the VCR section
2) Connect this unit, a power supply and a color video monitor as shown in Fig. 4-1.
3) Use the 10:1 probe of the oscilloscope when other not specified.
4) When "Record mode " specified, connect the AV input cable to AV jack, load the blank tape, set the VCR/CAMERA switch to VCR and press the REC START/STOP (or SW2 on the ATF jig) button.
5) After replacing the parts, check each adjustment. If you find the items necessary to be adjusted, remove the corresponding laser trimming resistor and replace and them with variable resistors for adjustment.
6) Electrical adjustments of the VCR block cannot be done in the state that unit is shipped from the factory. Remove the laser trimming resistors on the circuit board and solder the specified semi-variable resistors. (See item 3-10).

3-4. PRESET POSITION OF SWITCHES AND CONTROLS DURING ADJUSTMENT

- Unit (twist switch) ... "VCR" position
- POWER switch ..... "ON"
  (CAM/VCR switch ..... "VCR")

3-5. ADJUSTMENTS AFTER REPLACING MAJOR COMPONENTS IN THE VCR BLOCK

After replacing major components, perform adjustments, referring to the table below. The following table shows the minimum adjustments required after major components are placed.
The table below may not apply when several components are replaced, depending on the symptom of the defect.
Note: After replacing the parts, check each adjustment. If you find the items necessary to be adjusted, remove the corresponding laser trimming resistors and replace and them with variable resistors for adjustment.

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS					
		MAIN C.B.A	CYLINDER ASSEMBLY	LUMA C.B.A	IC801	IC102	IC201
SYSTEM CONTROL CIRCUIT AND SERVO CIRCUIT							
(1)	Setting the Head Switching Point	●	●		●		
(2)	Setting the Power Shut Off Level	●			●		
LUMINANCE/CHROMA CIRCUIT							
(1)	AGC Adjustment						●
(2)	Comb Filter Adjustment						●
(3)	IR Adjustment						●
(4)	Emphasis Input Level Adjustment						●
(5)	Carrier Frequency Adjustment						●
(6)	Deviation Adjustment						●
(7)	Playback Luminance Signal Level Adjustment	●	●				●
(8)	Record Luminance Signal Level Adjustment	●	●	●			●
(9)	Record Chroma Signal Level Adjustment	●	●			●	

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS					
		IC401R	IC401L	IC402	TITLER C.B.A	IC701	IC703
AUDIO CIRCUIT							
(1)	Record Matrix Adjustment	●	●	●			
(2)	Loop Filter Adjustment	●	●				
(3)	Audio Deviation Adjustment	●	●				
(4)	Playback Matrix Adjustment	●	●	●			
TITLER CIRCUIT							
(1)	Title Position Adjustment				●	●	●

MEMO

3-6. SYSTEM CONTROL CIRCUIT AND SERVO CIRCUIT

(1) Setting the Head Switching Point (Figs. 4-102, 4-151)

Note: Be sure to set the head switching point after replacing the cylinder and main circuit board (EA ROM).
The head switching point can be set automatically when the following steps performed.

TEST POINTS		ADJUST POINTS	CONDITION	EQUIPMENT/JIG	SPECIFICATION
·TP1 (SW30) ·VIDEO OUT (AV OUT) ·CN614	ATF L/C MAIN			·ATF Jig ·ATF Adapter Jig (SW1:VCR) ·Alignment Tape ·Oscilloscope	6H ± 1.5H

SETTING
1) Load an alignment tape. After checking that loading is complete, disconnect the power supply.
2) Connect the ATF adapter jig to CN614 on the main circuit board. (Set SW1 on the ATF adapter jig to "ON" position.)
3) Confirm SW2 on the ATF adapter jig to "VCR" position.
4) Supply the power (DC 6~7V) to unit.
5) Press the PLAY button on the function switch block (remote control unit).
6) Check that the camera/recorder enters the play mode automatically for several seconds and then the power is turned off automatically.
7) Disconnect the ATF adapter jig from the CN614 and remove the power supply.

CONFIRMATION
1) Supply the power (DC 6~7V) to unit.
2) Connect the ATF jig (SW1:OFF) via ATF adapter jig (SW1:OFF, SW2:VCR) to CN614 on the main circuit board.
3) Load an alignment tape and place the instrument in the PLAY mode.
4) Connect the oscilloscope terminated with 75 ohms to video out (AV OUT).
5) Trigger the oscilloscope at SW30Hz. (Use TP1 on the ATF jig.)
6) Set the oscilloscope to the (-) slope and confirm that the trailing edge of the SW30Hz signal is 6H ± 1.5H (horizontal) line before the start of channel-1 vertical sync.
7) Set the oscilloscope to the (+) slope and confirm that the leading edge of the SW30Hz signal is 6H ± 1.5H (horizontal) line before the start of channel-2 vertical sync.

Note: The waveform of channel-1 and channel-2 video signals in the diagram may be opposite depending on the alignment tape.

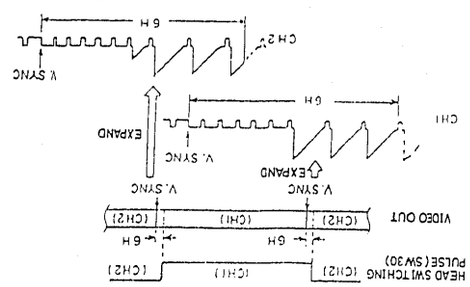


Fig. 4-102

(2) Setting the Power Shut Off Level (Fig. 4-151)

Note: Be sure to set the power shut off level after replacing the main circuit board (EA ROM).
The power shut off level can be set automatically by performing the following steps.
Be sure to connect the camera block and EVF block when setting the power shut off level .

TEST POINTS		ADJUST POINTS	CONDITION	EQUIPMENT/JIG	SPECIFICATION
·CN614 ·PG982-2 ·PG982-1 (GND)	MAIN MAIN MAIN			·ATF Jig ·ATF Adapter Jig ·Blank Tape ·DVM ·DC Power Supply (5~7V)	

SETTING
1) Set the unit to the "CAMERA" mode.
2) Loading a blank tape and set the 8mm video camera to the RECORD mode.
3) Connect the DVM to PG982-2 on the main circuit board.
(Use PG982-1 as ground.)
4) Adjust the voltage control of DC power supply so the voltage at PG982-2 is 5.6V ± 0.05V.
5) Set the 8mm video camera to the REC PAUSE mode and then disconnect the power supply.
6) Connect the ATF adapter jig (SW1: ON) to CN614 on the main circuit board.
7) Set the unit to the "VCR" mode.
8) Supply the power with the voltage (PG982-2 is 5.6V ± 0.05V) set in step 4).
9) Press the REWIND button on the function switch block (or remote control unit)
10) Check that the 8mm video camera enters record mode automatically for several seconds and then the power is turned off automatically.
Check that the power voltage in the record mode is 5.6V ± 0.05V.
If it is not 5.6V, set it to 5.6V and then perform adjustment from step 4 again.
11) Disconnect the ATF adapter jig from CN614 and remove the power supply.

CONFIRMATION
1) Set the unit to the "CAMERA" mode.
2) Load a blank tape and set the 8mm video camera to the RECORD mode.
3) Connect the DVM to PG982-2 on the main circuit board.
(Use PG982-1 as ground.)
4) Check that the unit is shut off when the power voltage (PG982-1) is set to DC 5.6V.

3-7. LUMINANCE/CHROMA CIRCUIT

(1) AGC Adjustment (Figs. 4-103, 4-152)

PURPOSE	To set the video output level in the E-E mode.				
INCOMPLETED PHENOMENON	The picture becomes dark or whitish in the E-E mode.				
TEST POINTS	ADJUST POINTS		CONDITION	EQUIPMENT/JIG	SPECIFICATION
·VIDEO OUT (AV OUT)	·RT213 (AGC 1)	LUMA	·Apply a color bar signal (1Vp-p). ·STOP mode.	·Oscilloscope ·Color Bar Generator	1V ± 0.02Vp-p

1) Connect the oscilloscope terminated with 75 ohms to video out (AV OUT).
2) Trigger the oscilloscope internally.
3) Adjust RT213 for 1V ± 0.02Vp-p.

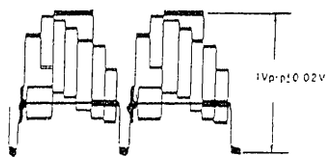


Fig. 4-103

(2) Comb Filter Adjustment (Figs. 4-104, 4-152)

PURPOSE	To set the characteristic of the comb filter.				
INCOMPLETED PHENOMENON	·Jamming occurs at the edges. ·The chroma S/N deteriorates.				
TEST POINTS		ADJUST POINTS		CONDITION	EQUIPMENT/JIG	SPECIFICATION
·TP204 ·TP206 (GND)	LUMA LUMA	·RT211 (COMB FILTER GAIN 1) ·RT215 (COMB FILTER PHASE)	LUMA LUMA	·Apply a color bar signal (1Vp-p). ·STOP mode.	·Oscilloscope ·Color Bar Generator	Minimize the residual chroma components.

1) Connect the oscilloscope to TP204.
2) Trigger the oscilloscope at video signal.
3) Adjust RT211 and RT215 to minimize the residual chroma components.

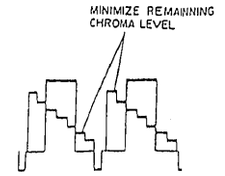


Fig. 4-104

(3) Trap Frequency Adjustment (Figs. 4-105, 4-151, 4-152)

PURPOSE	To set the characteristic of the filter in the IC.					
INCOMPLETED PHENOMENON	The chroma S/N deteriorates.					
TEST POINTS		ADJUST POINTS		CONDITION	EQUIPMENT/JIG	SPECIFICATION
·TP203 ·TP201 ·CN614-1 (5V) ·TP206 (GND)	LUMA LUMA MAIN LUMA	·RT209 (IR ADJ)	MAIN	·Apply a color bar signal (1Vp-p). ·STOP mode.	·Oscilloscope ·Color Bar Generator	Minimize the residual chroma components.

1) Connect the oscilloscope to TP203.
2) Trigger the oscilloscope at video signal.
3) Connect TP201 to CN614-1 (5V).
4) Adjust RT209 to minimize the residual chroma components.
5) Remove the TP201 from CN614-1.

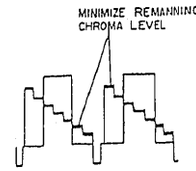


Fig. 4-105

(4) Emphassis Input Level Adjustment (Figs. 4-106, 4-152)

PURPOSE	To set the input level of the sub-emphasis circuit.				
INCOMPLETED PHENOMENON	Undershoots or overshoots occur in the picture.				
TEST POINTS	ADJUST POINTS		CONDITION	EQUIPMENT/JIG	SPECIFICATION
·TP202 ·TP206 (GND)	LUMA LUMA	·RT206 (EMPH. INPUT LEVEL)	LUMA	·Apply a color bar signal (1Vp-p). ·STOP mode.	·Oscilloscope ·Color Bar Generator	0.45V ± 0.01Vp-p

1) Connect the oscilloscope to TP202.
2) Trigger the oscilloscope at video signal.
3) Adjust RT206 for 0.45V ± 0.01Vp-p.

Fig. 4-106

(5) Carrier Frequency Adjustment (Figs. 4-107, 4-152)

PURPOSE		To set the modulation frequency at the sync tip of the FM modulator to the specified value.				
INCOMPLETED PHENOMENON		Black and white are inverted in the picture.				
TEST POINTS		*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·TP205 ·TP206 (GND)	LUMA LUMA	·RT204 (Fo ADJ 1)	LUMA	·Apply a white (100%) signal. ·STOP mode.	·Oscilloscope ·Color Bar Generator	238nS ± 3nS

1) Connect the oscilloscope to TP205.
2) Trigger the oscilloscope internally.
3) Adjust RT204 so the period of the widest pulse is 238nS ± 3nS.

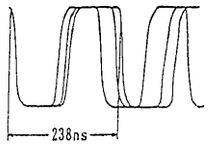


Fig. 4-107

(6) Deviation Adjustment (Figs. 4-108, 4-152)

PURPOSE		To set the modulation frequency at the white peak of the FM modulator to the specified value.				
INCOMPLETED PHENOMENON		The picture becomes dark or whitish during recording and playback.				
TEST POINTS		*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·TP205 ·TP206 (GND)	LUMA LUMA	·RT205 (DEV. Fo ADJ)	LUMA	·Apply a white (100%) signal. ·STOP mode.	·Oscilloscope ·Color Bar Generator	185nS ± 2nS

1) Connect the oscilloscope to TP205.
2) Trigger the oscilloscope internally.
3) Adjust RT205 so the period of the narrowest pulse is 185nS ± 2nS.

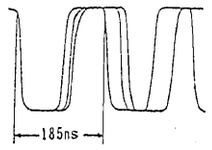


Fig. 4-108

(7) Playback Luminance Signal Level Adjustment (Figs. 4-109, 4-110, 4-152)

PURPOSE		To set the luminance playback level to the specified value.				
INCOMPLETED PHENOMENON		The picture becomes dark or whitish during playback.				
TEST POINTS		*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·TP209 ·TP206 (GND) ·VIDEO OUT (AV OUT)	LUMA LUMA	·RT218 (PB LUMA LEVEL 2) ·RT207 (PB LUMA LEVEL)	LUMA LUMA	·Playback the alignment tape	·Oscilloscope ·Alignment Tape	·0.45V ± 0.01Vp-p ·1V ± 0.02Vp-p

1) Connect the oscilloscope to TP209.
2) Trigger the oscilloscope at video signal.
3) Adjust RT218 so that the waveform of TP209 is 0.45V ± 0.01Vp-p. (Fig. 4-109)
4) Connect the oscilloscope terminated with 75 ohms to video out (AV OUT).
5) Trigger the oscilloscope internally.
6) Adjust RT207 so that the waveform of video out is 1V ± 0.02Vp-p. (Fig. 4-110)

Fig. 4-109

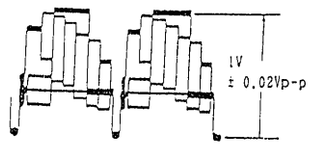


Fig. 4-110

(8) Record Luminance Signal Level Adjustment (Figs. 4-111, 4-152)

PURPOSE		To set the luminance recording level to the specified value.				
INCOMPLETED PHENOMENON		·The luminance S/N deteriorates. ·Oblique beats occur in the picture. ·Black and white are inverted in the picture.				
TEST POINTS		*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·TP205 ·TP206 (GND)	LUMA LUMA	·RT201 (REC LUMA LEVEL)	LUMA	·Apply a color bar signal (1Vp-p). ·STOP mode.	·Oscilloscope ·Color Bar Generator	160mV ± 10mVp-p

1) Connect the oscilloscope to TP205.
2) Trigger the oscilloscope at video signal.
3) Adjust RT201 so that the record luminance level is 160mV ± 10mVp-p.

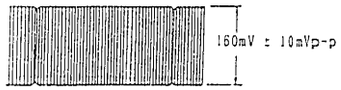


Fig. 4-111

(9) Record Chroma Signal Level Adjustment (Figs. 4-112, 4-151, 4-152)

PURPOSE		To set the chroma recording level to the specified value.				
INCOMPLETED PHENOMENON		·The chroma S/N deteriorates. ·Oblique beats occur in the picture.				
TEST POINTS		*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·TP210 ·TP206 (GND)	LUMA LUMA	·RT101 (REC CHROMA LEVEL)	MAIN	·Apply a color bar signal (1Vp-p). ·STOP mode.	·Oscilloscope ·Color Bar Generator	70mV ± 5mVp-p

1) Connect the oscilloscope to TP210.
2) Trigger the oscilloscope at video signal.
3) Adjust RT101 so that the burst level on the record chroma level is 70mV ± 5mVp-p.

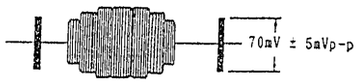


Fig. 4-112

3-8. AUDIO CIRCUIT

(1) Record Matrix Adjustment (Fig. 4-151)

PURPOSE		To separete the L-ch and R-ch audio appropriately during recording.				
INCOMPLETED PHENOMENON		L-ch and R-ch audio cannot be recorded appropriately.				
TEST POINTS		*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·AUDIO INPUT L-ch ·AUDIO INPUT R-ch ·AUDIO GND (AV JACK) ·TL405	 MAIN	·RT481 (E-E MATRIX)	MAIN	·Apply 1kHz, -7.8 dBs ± 3dBs audio signals to L-ch and R-ch simultaneously (The input signals are in phase and have the same level.) ·RECORD mode	·Oscilloscope ·C/R Oscillator ·Blank Tape	Minimize the waveform

1) Connect the oscilloscope to TL405.
2) Trigger the oscilloscope internally.
3) Adjust RT481 to minimize the waveform of TL405.

(2) Loop Filter Adjustment (Fig. 4-151)

PURPOSE	To lock the carrier frequency with a PLL.				
INCOMPLETED PHENOMENON	No audio output.				
TEST POINTS	*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·TL403L MAIN ·TL403R MAIN ·AUDIO GND (AV JACK)	·RT421L (FILTER L) MAIN ·RT421R (FILTER R) MAIN		·Remove the luma circuit board.	·DVM ·C/R Oscillator ·Blank Tape	2.1V ± 0.1V

1) Apply 1kHz, -7.8dBs ± 3dBs audio signals to L-ch and R-ch simultaneously.
2) Using a blank tape, make a recording and play it back.
3) Connect the DVM to TL403L.
4) Adjust RT421L for 2.1V + 0.3V/-0.1V.
5) Connect the DVM to TL403R.
6) Adjust RT421R for 2.1V + 0.3V/-0.1V.

(3) Deviation Adjustment (Fig. 4-151)

PURPOSE	To set the audio playback level.				
INCOMPLETED PHENOMENON	L-ch and R-ch audio levels are different.				
TEST POINTS	*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·TL401L MAIN ·TL401R MAIN ·AUDIO GND (AV JACK)	·RT422L (DEV. L) MAIN ·RT422R (DEV. R) MAIN		·Remove the luma circuit board	·Millivoltmeter ·C/R Oscillator ·Blank Tape	-15dBs ± 0.5dBs

1) Apply 1kHz, -7.8dBs ± 3dBs audio signals to L-ch and R-ch simultaneously.
2) Using a blank tape, make a recording and play it back.
3) Connect the millivoltmeter to TL401L.
4) Adjust RT422L for -15dBs ± 0.5dBs.
5) Connect the millivoltmeter to TL401R.
6) Adjust RT422R for -15dBs ± 0.5dBs.

(4) Playback Matrix Adjustment (Fig. 4-151)

PURPOSE	To separate the L-ch and R-ch audio appropriately during playback.				
INCOMPLETED PHENOMENON	L-ch and R-ch audio cannot be played back appropriately.				
TEST POINTS	*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
·AUDIO INPUT L-ch ·AUDIO OUTPUT R-ch ·AUDIO GND (AV JACK)	·RT482 (PB MATRIX)	MAIN	·Apply an audio signal (1kHz, -7.8dBs ± 3dBs) to the AUDIO INPUT L-ch.	·Oscilloscope ·C/R Oscillator ·Blank Tape	Minimize the waveform

1) Make a recording and play it back.
2) Connect the oscilloscope to audio output R-ch.
3) Trigger the oscilloscope internally.
4) Adjust RT482 to minimize the waveform.

3-9. TITLER CIRCUIT

(1) Title Position Adjustment (Figs. 4-113, 4-153)

PURPOSE	To set the position of a title.				
INCOMPLETED PHENOMENON	There will be gaps on the left and right of title.				
TEST POINTS	*ADJUST POINTS*		*CONDITION*	*EQUIPMENT/JIG*	*SPECIFICATION*
	·CT701 (TITLE POSITION)	TITL	·Set the unit to the CAMERA mode. ·Aim the camera at the white subject	·Color Video Monitor	

1) Press the TITLE ON/OFF button and set the unit to TITLE ON mode.
2) Press the SHIFT buttons and select the heart character.
3) Adjust CT701 so that the heart character is positioned at the center of the monitor screen.

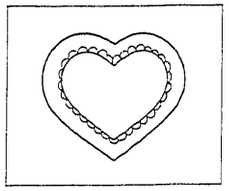


Fig. 4-113

3-10. ADJUSTMENT COMPONENTS LOCATIONS

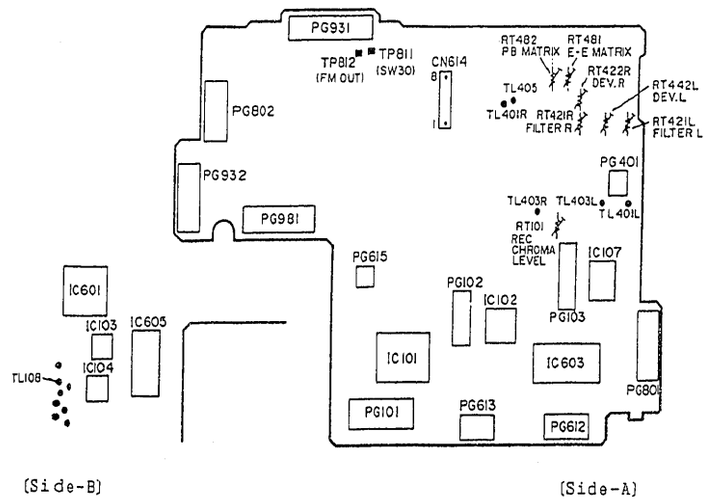


Fig. 4-151 Main (MAIN) Circuit Board

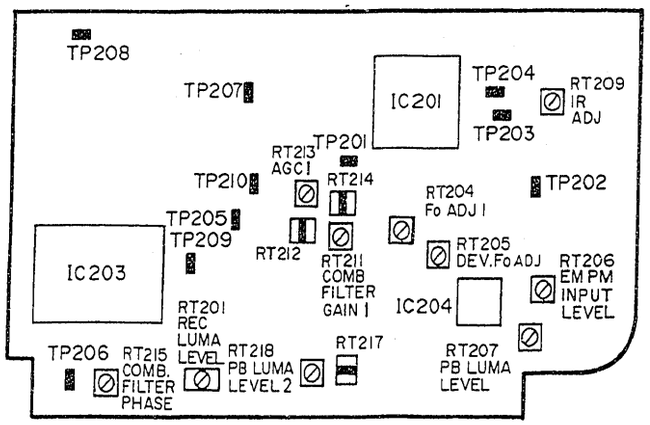


Fig. 4-152 Luma (LUMA) Circuit Board (Side-A)

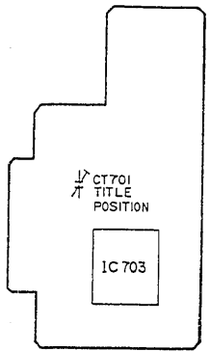


Fig. 4-153 Titler (TITL) Circuit Board (Side-A)

Note: Electrical adjustments of the VCR block cannot be done in the state that the unit is shipped from the factory. Unsolder the laser trimming resistors on the circuit board and solder the specified semi-variable resistors. (See the table below.)

ADJUST POINT	SEMI-VARIABLE RESISTOR (Ω)	C. B. A	NAME OF ADJUSTMENT
RT204	10 k	LUMA	Fo ADJ. 1
RT205	5 k	LUMA	DEV. Fo ADJ
RT206	2 k	LUMA	EMPH. INPUT LEVEL
RT207	2 k	LUMA	PB LUMA LEVEL
RT209	20 k	LUMA	IR ADJ
RT211	50 k	LUMA	COMB FILTER GAIN 1
RT213	50 k	LUMA	AGC 1
RT215	500	LUMA	COMB FILTER PHASE
RT218	2 k	LUMA	PB LUMA LEVEL 2

Note: Insulate the terminals shown in Fig. 4-154 when soldering. Adjust the semi-variable resistors within the range shown in Fig. 4-154.

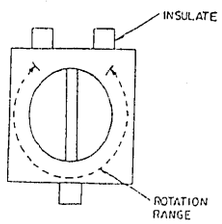


Fig. 4-154

CHAPTER 5 SCHEMATIC DIAGRAM AND CIRCUIT BOARD DIAGRAMS

WHEN USING THIS SERVICE REFERENCE MATERIAL

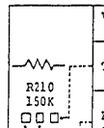
1. Markings in Schematic and Circuit Board Diagrams

(1) Parts with marks "■" attached to circuit numbers in the schematic and circuit board diagrams are discrete components.
(2) Parts with marks (2) in the circuit board diagrams are leadless jumpers.

2. How to Read Abbreviations

Values, dielectric resistances (power capacitances), tolerances, grades of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams using abbreviations. Collate these abbreviations and the following tables for reading abbreviations to replace parts correctly.

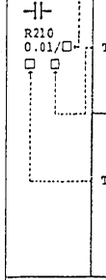
2-1. Resistors



Value	No indication ..... ohm K ..... kohm
Tolerance	No indication ..... ±5% K ..... ±10% M ..... ±20%
Power capacitance	No indication ..... 1/8W (All capacitances other than 1/8W are indicated in schematic diagrams with W omitted)
Type	No indication .. Carbon film fixed RC ..... Carbon solid RW ..... Power-type wire-wound solid RS ..... Metal oxide film solid RN ..... Metal film solid

Example
R210
150K ..... 150 kohm, carbon solid
RC.1/2.K 1/2W, ±10%

2-2. Capacitors



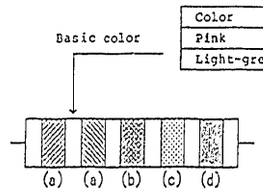
Value	No indication ..... μF P ..... PF
Dielectric resistance	No indication ..... 50WV (All resistances other than 50WV and those of electrolytic capacitors are indicated with WV omitted.)
Tolerances	No indication ..... ±10% J ..... ±5% M ..... ±20% C ..... ±0.25PF Z ..... +80%/-20% (No indication with electrolytic capacitors (excluding tantalum and high stability electrolytic capacitors)
Type	No indication .. Ceramic, general electrolytic (see circuit symbol to distinct from ceramic) MYL ..... Mylar (Polyester film) STY ..... Styrol TA ..... Tantalum KU ..... High stability electrolytic MP ..... Metalized paper

Example
C210
0.01/25 ..... Mylar, 0.01μF, 25WV
MYL.J ±5%

3. How to Read Capacitance of Resistance-Type Capacitors and Coils

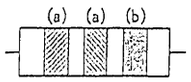
3-1 Capacitors

Color	Related voltage
Pink	25V
Light-green	50V



Color	Capacitance (a)	Multiplier (b)	Tolerance (c)	Characteristics (d)
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6	10^6		
Purple	7			
Gray	8		±30%	High permittivity type
White	9			For temperature compensation
Gold			±5%	
Silver			±10%	

3-2 Coils



4. Cautions on Use of MOS ICs

(1) MOS ICs are inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
(2) High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
(3) The human body and clothes made of synthetic fibres or nylon gloves may be charged with several thousands volts of static electricity because of friction, so workers should be grounded.
(4) Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

5. Measure the voltages at each section with the negative side of power supply as a reference.

The voltages in the camera section are measured with the VTR in the record mode, and those in the VTR section are measured in the record and playback modes.

* Voltages in ( ) are in the record mode.
* One voltage value is common for recording and playback.

LEADLESS COMPONENT IDENTIFICATION

1. Leadless Transistors

The leadless transistor number is indicated by a code on its surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three letters.

Letter	Transistor Number	Letter	Transistor Number
A	2SB709	H	2SA1036K
A(R)	2SB1218R(AR)	I	2SB792
A(S)	2SB766S(AS)	J	2SC2735
A(J)	2SB1000J(AJ)	K	2SA1036
B	2SC1621	K(P)	2SC2413P(KP)
B(J)	2SB1001J(BJ)	L	2SC2462
B(R)	2SC4081R(BR)	M	2SA1052
B(R)	2SC2412AR(BR)	N	2SC1653
B(S)	2SC2412KS(BS)	N(E)	2SD1306E(NE)
C	2SA1122	P	2SD814
C(L)	2SD999L(CL)	P(E)	2SA1171E(PE)
C(R)	2SB710R(CR)	Q	2SC2620
C(R)	2SC4097R(CR)	Q(O)	2SC2714O(QO)
C(R)	2SC2411R(CR)	R	2SC2618
C(Q)	2SC2411KQ(CQ)	S	2SA1121
D	2SC2463	S(Q)	2SC3082KQ(SQ)
D(L)	2SB798L(DL)	U	2SC2404
E	2SA1022	W	2SD602
F	2SC2619	Y	2SD601
F(S)	2SA1037KS(FS)	Y(R)	2SD1819R(YR)
F(R)	2SA1576R(FR)	Z	2SD874
-	- - - -	-	- - - -
AA(S)	2SD1757KS(AAS)	DB(R)	2SD1766R(DBR)
BC(R)	2SB1188R(BCR)	IR(D)	2SA1484D(IRD)
BF(R)	2SB1308R(BFR)		
-	- - - -	-	- - - -
1D(T)	2SD1328T(1DT)	1C(R)	2SB902R(1CR)
-	- - - -	-	- - - -
B(3)	2SC1621(3)(B3)	L(6)	MMBC1623(6)(L6)
C(7)	2SA811(7)(C7)	L(6)	2SC1623(6)(L6)
L(7)	2SC2812(7)(L7)	F(2)	2SC1009(2)(F2)
M(6)	2SA812(6)(M6)	M(6)	2SA1179(6)(M6)
N(4)	2SC1653(4)(N4)		
-	- - - -	-	- - - -
D(16)	2SC1622A(16)(D16)	R(25)	2SC3356(25)(R25)
R(35)	2SC3583(35)(R35)	R(45)	2SC3585(45)(R45)
Y(25)	NTM3906(25)(Y25)		
-	- - - -	-	- - - -
1(D)	2SC3127D(1D)		
-	- - - -	-	- - - -
S1	FMS1	S2	FMS2
T1	IMT1	W1	FMW1
W2	FMW2	W3	FMW3
X1	IMX1	Y1	FMY1
Y3	FMY3	Z1	IMZ1
Z2	IMZ2		
-	- - - -	-	- - - -
4R	XN1C301	5H	XN4501
5K	XN4401		
Digital Transistor			
04	DTC114TK	06	DTC144TK
13	DTA143EK	15	DTA124K
15(s)	DTA124EU	16	DTA144EK
16(s)	DTA144EU	23	DTC143EK
24	DTC114EK	24(s)	DTC114EU
25	DTC124K	25(s)	DTC124EU
26	DTC144K	26(s)	DTC144EU
33	DTA143XK	43	DTC143XK
52	DTA123YK	64	DTC114YK
-	- - - -	-	- - - -
6B	UN5112	8B	UN5212
-	- - - -	-	- - - -
F52	DTB123	G21	DTD1132K
H03	DTC343TK	H27	DTC363EK
R31	FP1L2Q		
-	- - - -	-	- - - -
A1	FMA1	A2	FMA2
B2	IMB2	C2	FMC2
D2	IMD2	G1	FMG1
G2	FMG2	G5	FMG5
H2	IMH2		

Letter	Transistor Number	Letter	Transistor Number
FET			
G	2SK302	J	2SK208
K	2SK160	W	2SK322
X	2SK157	X(4)	2SK94(4)(X4)
X(17)	2SK425(17)(X17)		
Y	2SK197	Z	2SK217
-	- - - -	-	- - - -
XA	2SK980		
-	- - - -	-	- - - -
3	2SK620	3(0)	2SK621(0)(30)
-	- - - -	-	- - - -
1M	2SA1052	1F	2SK321
1K	2SK316	2B	2SK374

* "(s)" in the above table shows a component with smaller size.
* Codes on the digital transistors show only the transistor numbers.

(1) Identification for two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
CD	2SA1122D
LD	2SC2462D

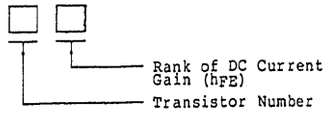


Fig.5-1 Leadless Transistor Code

(2) Identification for two types of one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Transistor Number
L	2SC1623

Example:

Code	Number
L5	2SC1623(5)
L6	2SC1623(6)

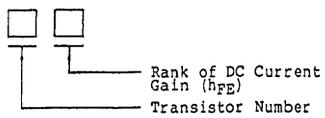
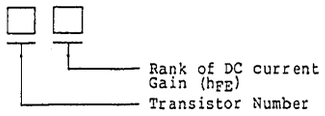


Fig.5-2 Leadless Transistor Code

Example:

Code	Number
1D	2SC3127D



Note: Codes S1, S2, T1, W1, W2, W3, X1, Y1, Y3, Z1 and Z2 show only the transistor numbers.

Fig.5-3 Leadless Transistor Code

(3) Identification for one numeral and two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
1FQ	2SK321Q

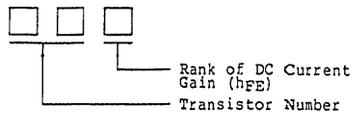


Fig.5-4 Leadless Transistor Code

(4) Identification for one letter and two numerals.
Use this coce and the following chart for component identification.

Example:

Code	Number
R25	25C3356

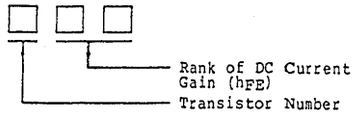


Fig. 5-5 Leadless Transistor Code

(5) Identification for two letters and one numeral.
Use this code and the following chart for component identification.

Example:

Code	Number
DV5	2SD596

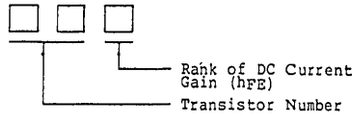


Fig. 5-6 Leadless Transistor Code

(6) Identification for three letters.
Use this code and the following chart for component identification.

Example:

Code	Number
AAS	2SD1757KS

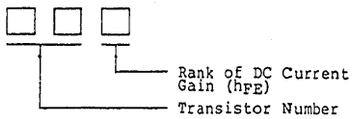


Fig. 5-7 Leadless Transistor Code

2. Leadless Diodes

Leadless diode numbers are indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three numerals.
Use this code and the following chart for component identification.

Code	Diode Number	Code	Diode Number
BE	1SV172		
MC	MA153	MC(s)	MA143
MH	MA151K	MH(s)	MA141K
MN	MA151WA	MN(s)	MA141WA
MO	MA152WA		
MT	MA151WK	MT(s)	MA141WK
MU	MA152WK		
-	- - -	-	- - -
M1D	MA160	M1P	MA714
M2A	MA122	S1A	1SR143
-	- - -	-	- - -
N	DAN202K	Z	DA106K
-	- - -	-	- - -
A3	1S2835	A5	1S2837
C1	HSM88S	C2	HSM276S
-	- - -	-	- - -
1A	MA110		
-	- - -	-	- - -
3.0L	MA3030L	4.3L	MA3043L
4.7M	MA3047M	5.1M	MA3051M
5.1L	MA3051L	5.6M	MA3056M
6.2L	MA3062L	6.8M	MA3068
6.8M	MA3068M	7.5H	MA3075H
7.5L	MA3075L	8.2M	MA3082M
9.1M	MA3091	9.1M	MA3091M
10L	MA3100L	56M	MA3056M
75L	MA3075L	82M	MA3082M
91M	MA3091M		
-	- - -	-	- - -
20	HZM6-B	27	RD2.7M-B
30	RD3.0M-B	51	RD5.1M-B2
56	RD5.6M-B	91	RD9.1M-B
-	- - -	-	- - -
102	RD10M-B2	122	RD12M-B2
163	RD16M-B3	182	RD18M-B2
271	RD2.7M-B	272	RD2.7M-B2
301	RD3.0M-B	362	RD3.6M-B2
391	RD3.9M-B1	512	RD5.1M-B2
561	RD5.6M-B	621	RD6.2M-B1
681	RD6.8M-B	683	RD6.8M-B3
911	RD9.1M-B		

* "(s)" in the above table shows a component with smaller size.

3. Leadless Resistors

The resistor value is indicated on the surface of the component, using a three-digit numbers, or one letter and one numeral.

(1) Identification for three digit numbers.
Read this code following the same procedure as when reading the color code on discrete resistors.

Example:

Code	Value
330	$33 \times 10^{0} = 33$ ohms
561	$56 \times 10^{1} = 560$ ohms
123	$12 \times 10^{3} = 12K$ ohms
1R2	1 + 0.2 = 1.2 ohms (R: Decimal point)

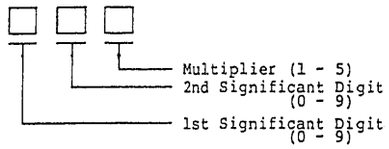


Fig. 5-8 Leadless Resistor Code

(2) Identification for one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

Example:

Code	Value
A1	1×10^1 = 10 ohms
G2	1.8×10^2 = 180 ohms
L3	2.7×10^3 = 2700 ohms
S4	4.7×10^4 = 47K ohms
W5	6.8×10^5 = 680K ohms

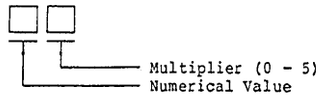
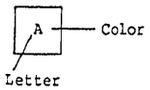


Fig. 5-9 Leadless Resistor Code

4. Leadless Capacitors

The capacitance value is indicated on the surface of the component, using body color and one letter, or one letter and one numeral.

(1) Identification for body color and one letter.

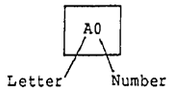


Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1(PF)	Blue	A	100(PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		N	330
	Q	8		Q	390
	S	9		S	470
				U	560
Black	A	10(PF)		W	680
	C	12		Y	820
	E	15			
	G	18	White	A	0.001(μF)
	J	22		E	0.0015
	L	27		J	0.0022
	N	33		L	0.0027
	Q	39		N	0.0033
	S	47		S	0.0047
	U	56		W	0.0068
	W	68			
	Y	82	Green	A	0.01(μF)
				E	0.015
				J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082
			Yellow	A	0.1(μF)

Example:

Color	Code	Value
Red	A	1PF
Black	A	10PF

(2) Identification for one letter and one numeral.



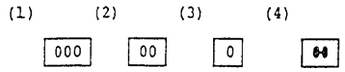
Letter /Number	Value	Letter /Number	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
		U2	560
A1	10(PF)	W2	680
C1	12	Y2	820
E1	15		
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56		
W1	68	A4	0.01(μF)
Y1	82	E4	0.015
		J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1

Example:

Letter /Number	Value
A0	1PF
A1	10PF

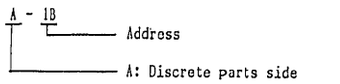
5. Leadless Jumper

The leadless jumper is indicated as shown below.



6. How to Read the Address of Leadless Components.

Address of leadless components



(3) Identification for one numeral and two letters.

Use this code and the following chart for component identification.

Example:

Code	Number
1FQ	2SK321Q

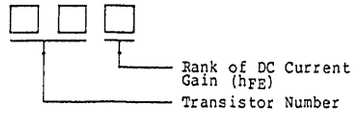


Fig. 5-4 Leadless Transistor Code

(4) Identification for one letter and two numerals.

Use this coce and the following chart for component identification.

Example:

Code	Number
R25	25C3356

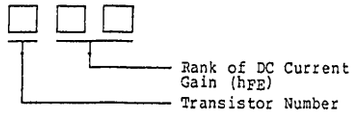


Fig. 5-5 Leadless Transistor Code

(5) Identification for two letters and one numeral.

Use this code and the following chart for component identification.

Example:

Code	Number
DV5	2SD596

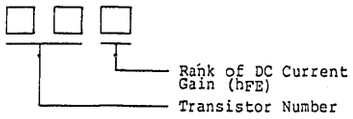


Fig. 5-6 Leadless Transistor Code

(6) Identification for three letters.

Use this code and the following chart for component identification.

Example:

Code	Number
AAS	2SD1757KS

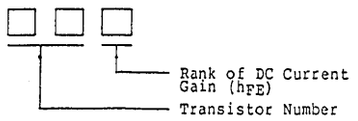


Fig. 5-7 Leadless Transistor Code

2. Leadless Diodes

Leadless diode numbers are indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three numerals.

Use this code and the following chart for component identification.

Code	Diode Number	Code	Diode Number
BE	1SV172		
MC	MA153	MC(s)	MA143
MH	MA151K	MH(s)	MA141K
MN	MA151WA	MN(s)	MA141WA
MO	MA152WA		
MT	MA151WK	MT(s)	MA141WK
MU	MA152WK		
-	- - -	-	- - -
M1D	MA160	M1P	MA714
M2A	MA122	S1A	1SR143
-	- - -	-	- - -
N	DAN202K	2	DA106K
-	- - -	-	- - -
A3	1S2835	A5	1S2837
C1	HSM88S	C2	HSM276S
-	- - -	-	- - -
1A	MA110		
-	- - -	-	- - -
3.0L	MA3030L	4.3L	MA3043L
4.7M	MA3047M	5.1M	MA3051M
5.1L	MA3051L	5.6M	MA3056M
6.2L	MA3062L	6.8M	MA3068
6.8M	MA3068M	7.5H	MA3075H
7.5L	MA3075L	8.2M	MA3082M
9.1M	MA3091	9.1M	MA3091M
10L	MA3100L	56M	MA3056M
75L	MA3075L	82M	MA3082M
91M	MA3091M		
-	- - -	-	- - -
20	HZM6-B	27	RD2.7M-B
30	RD3.0M-B	51	RD5.1M-B2
56	RD5.6M-B	91	RD9.1M-B
-	- - -	-	- - -
102	RD10M-B2	122	RD12M-B2
163	RD16M-B3	182	RD18M-B2
271	RD2.7M-B	272	RD2.7M-B2
301	RD3.0M-B	362	RD3.6M-B2
391	RD3.9M-B1	512	RD5.1M-B2
561	RD5.6M-B	621	RD6.2M-B1
681	RD6.8M-B	683	RD6.8M-B3
911	RD9.1M-B		

* "(s)" in the above table shows a component with smaller size.

3. Leadless Resistors

The resistor value is indicated on the surface of the component, using a three-digit numbers, or one letter and one numeral.

(1) Identification for three digit numbers.

Read this code following the same procedure as when reading the color code on discrete resistors.

Example:

Code	Value
330	33×10^0 = 33 ohms
561	56×10^1 = 560 ohms
123	12×10^3 = 12K ohms
1R2	1 + 0.2 = 1.2 ohms

(R: Decimal point)

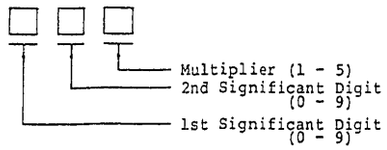


Fig. 5-8 Leadless Resistor Code

(2) Identification for one letter and one numeral.

Use this code and the following chart for component identification.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

Example:

Code	Value
A1	1×10^1 = 10 ohms
G2	1.8×10^2 = 180 ohms
L3	2.7×10^3 = 2700 ohms
S4	4.7×10^4 = 47K ohms
W5	6.8×10^5 = 680K ohms

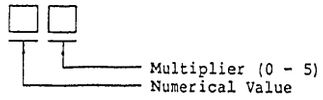
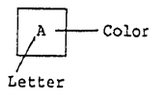


Fig. 5-9 Leadless Resistor Code

4. Leadless Capacitors

The capacitance value is indicated on the surface of the component, using body color and one letter, or one letter and one numeral.

(1) Identification for body color and one letter.

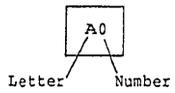


Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1(PF)	Blue	A	100(PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		N	330
	Q	8		Q	390
	S	9		S	470
				U	560
Black	A	10(PF)		W	680
	C	12		Y	820
	E	15			
	G	18	White	A	0.001(μF)
	J	22		E	0.0015
	L	27		J	0.0022
	N	33		L	0.0027
	Q	39		N	0.0033
	S	47		S	0.0047
	U	56		W	0.0068
	W	68			
	Y	82	Green	A	0.01(μF)
				E	0.015
				J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082
			Yellow	A	0.1(μF)

Example:

Color	Code	Value
Red	A	1PF
Black	A	10PF

(2) Identification for one letter and one numeral.



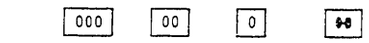
Letter /Number	Value	Letter /Number	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
		U2	560
A1	10(PF)	W2	680
C1	12	Y2	820
E1	15		
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56		
W1	68	A4	0.01(μF)
Y1	82	E4	0.015
		J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1

Example:

Letter /Number	Value
A0	1PF
A1	10PF

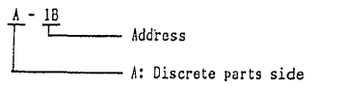
5. Leadless Jumper

The leadless jumper is indicated as shown below.



6. How to Read the Address of Leadless Components.

Address of leadless components



CIRCUIT BOARD CONNECTION DIAGRAM-CAMERA-

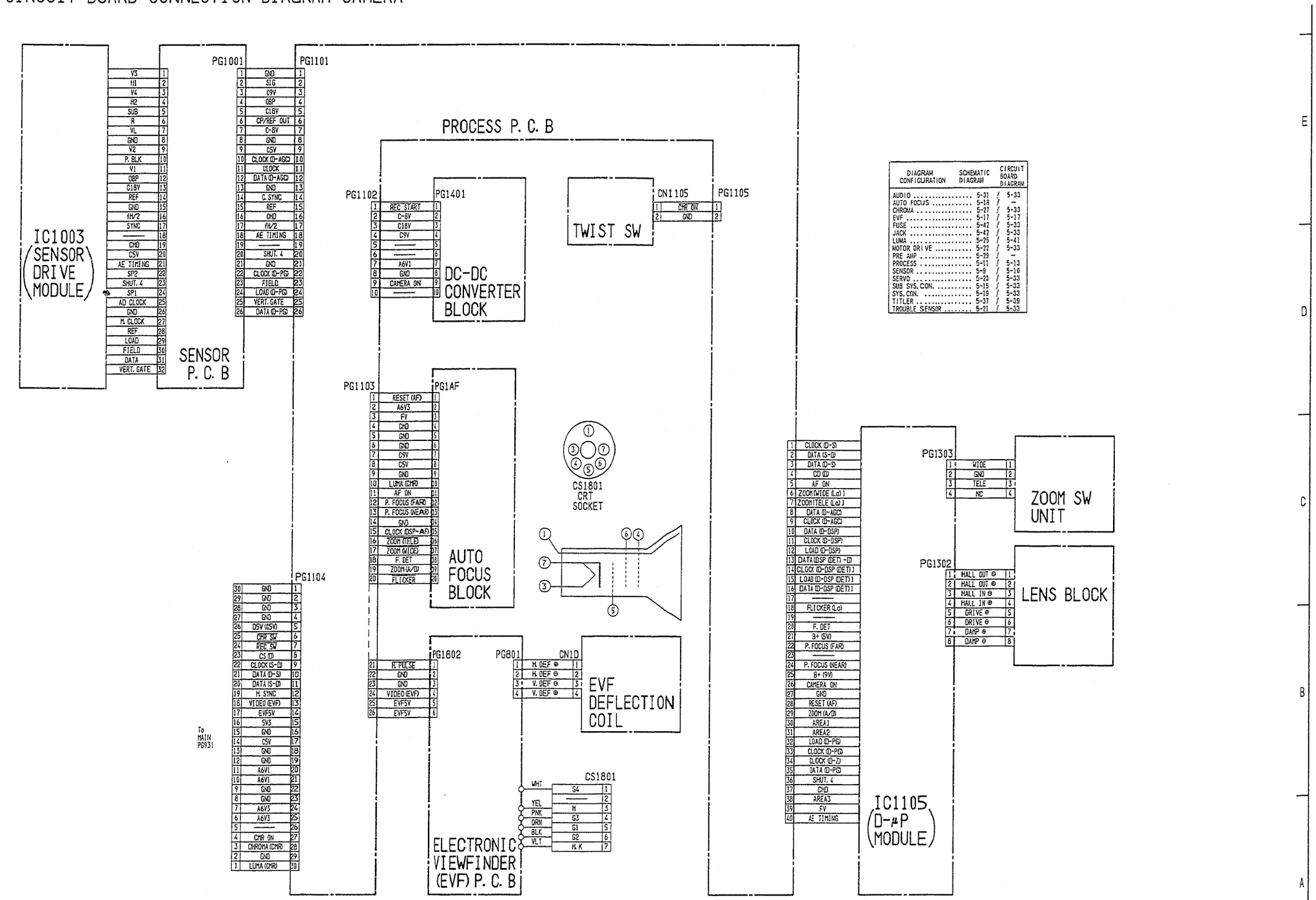


DIAGRAM CONFIGURATION	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
AUDIO	5-31	5-33
AUTO FOCUS	5-18	—
CHROMA	5-27	5-33
EVF	5-17	5-17
FUSE	5-42	5-33
JACK	5-42	5-33
LUMA	5-25	5-41
MOTOR DRIVE	5-22	5-33
PRE AMP	5-29	—
PROCESS	5-11	5-13
SENSOR	5-9	5-10
SERVO	5-23	5-33
SUB SYS. CON.	5-15	5-33
SYS. CON.	5-19	5-33
TITLER	5-37	5-39
TROUBLE SENSOR	5-21	5-33

CIRCUIT BOARD CONNECTION DIAGRAM-VCR-

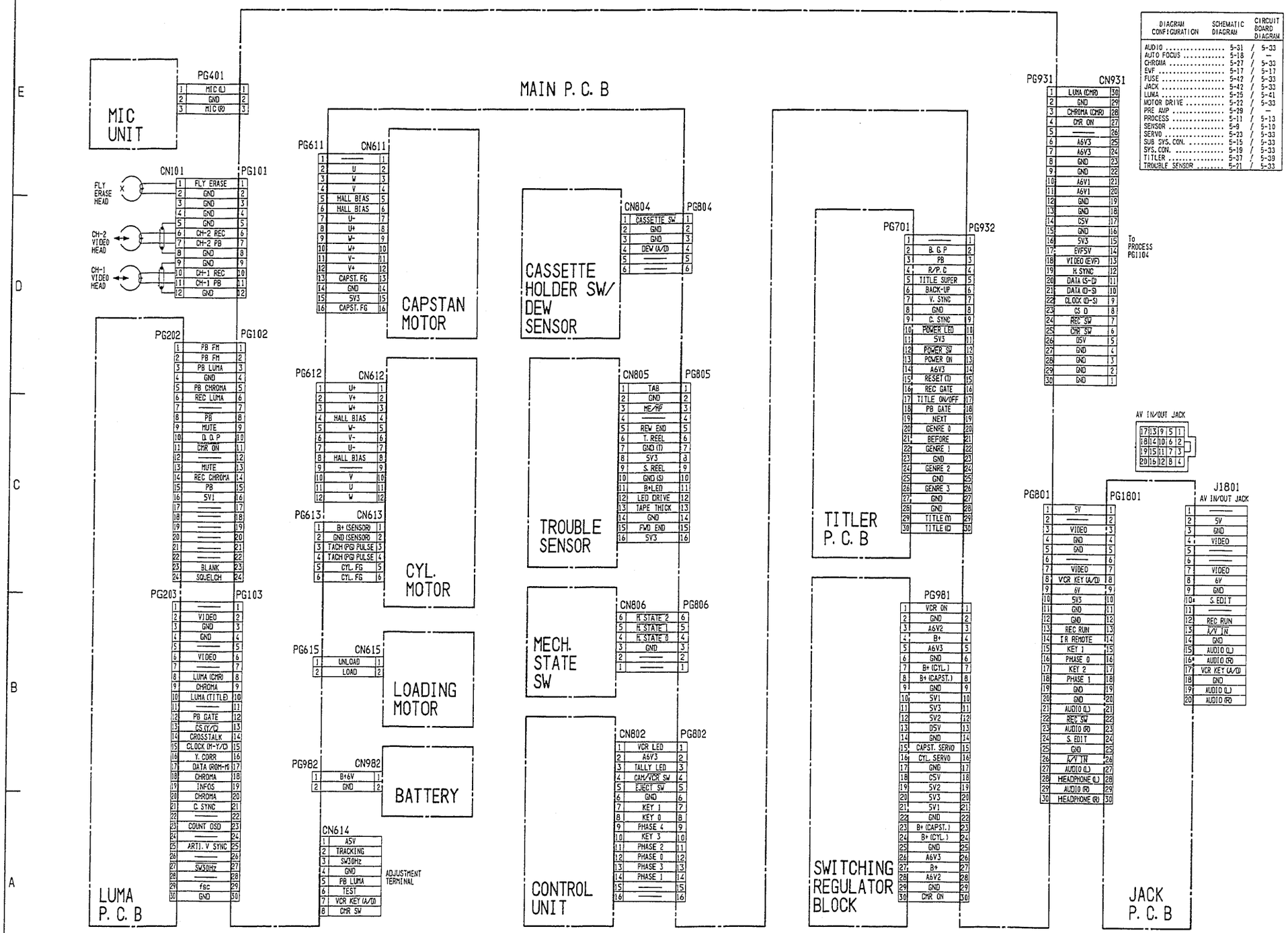


DIAGRAM CONFIGURATION	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
AUDIO	5-31	5-33
AUTO FOCUS	5-18	—
CHROMA	5-27	5-33
EVF	5-17	5-17
FUSE	5-42	5-33
JACK	5-42	5-33
LUMA	5-25	5-41
MOTOR DRIVE	5-22	5-33
PRE AMP	5-29	—
PROCESS	5-11	5-13
SENSOR	5-9	5-10
SERVO	5-23	5-33
SUB SYS. CON.	5-15	5-33
SYS. CON.	5-19	5-33
TITLER	5-37	5-39
TROUBLE SENSOR	5-21	5-33

SENSOR SCHEMATIC DIAGRAM

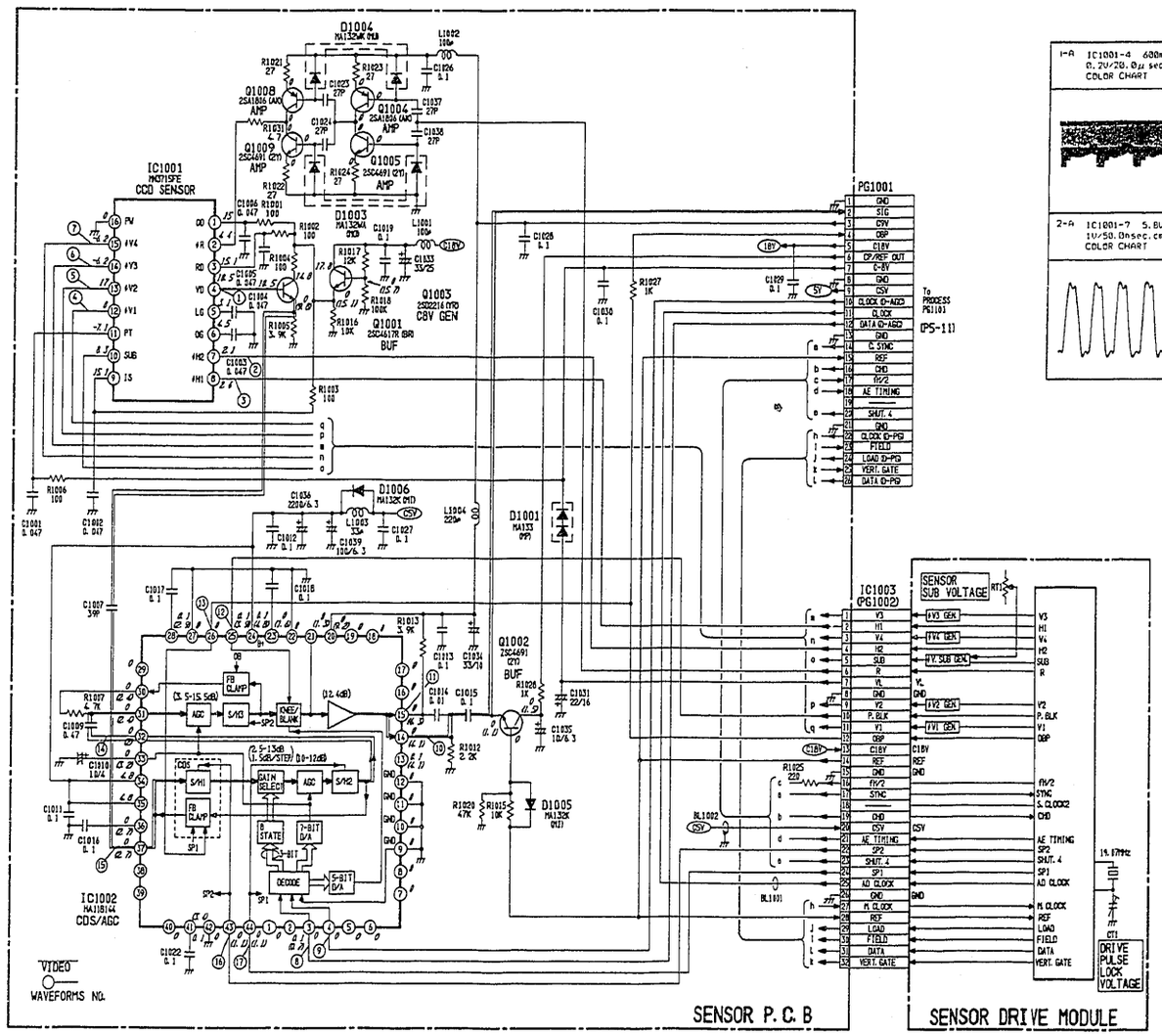
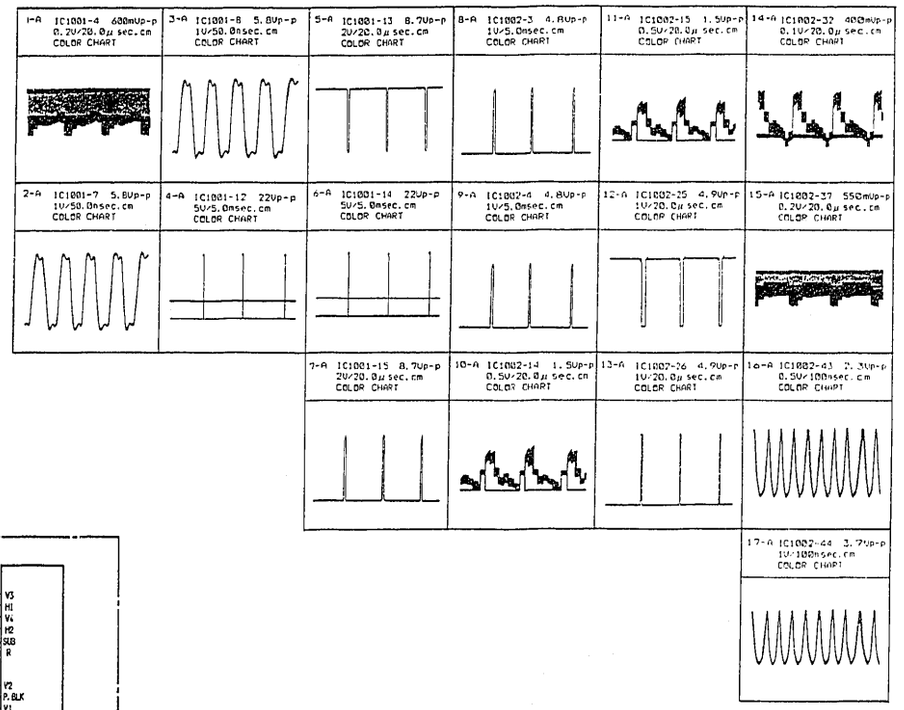


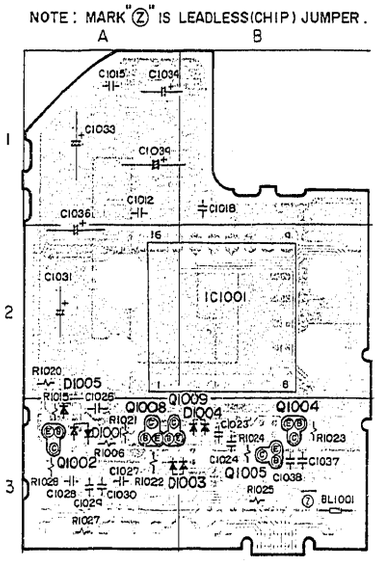
DIAGRAM CONFIGURATION	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
AUDIO	5-31	5-33
AUTO FOCUS	5-18	—
CHROMA	5-27	5-33
EVF	5-17	5-17
FUSE	5-42	5-33
JACK	5-42	5-33
LUMA	5-25	5-41
MOTOR DRIVE	5-22	5-33
PRE AMP	5-29	—
PROCESS	5-11	5-13
SENSOR	5-9	5-10
SERVO	5-23	5-33
SUB SYS.CON.	5-15	5-33
SYS.CON.	5-19	5-33
TITLER	5-37	5-39
TROUBLE SENSOR	5-21	5-33

SENSOR WAVEFORMS

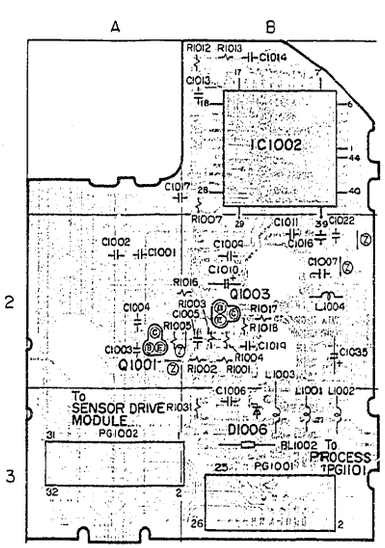

1-A IC1001-4 600mVp-p 0.2V/20.0μ sec.cm COLOR CHART
2-A IC1001-7 5.8Vp-p 1V/50.0nsec.cm COLOR CHART
3-A IC1001-8 5.8Vp-p 1V/50.0nsec.cm COLOR CHART
4-A IC1001-12 22Vp-p 5V/5.0nsec.cm COLOR CHART
5-A IC1001-13 8.7Vp-p 2V/20.0μ sec.cm COLOR CHART
6-A IC1001-14 22Vp-p 5V/5.0nsec.cm COLOR CHART
7-A IC1001-15 8.7Vp-p 2V/20.0μ sec.cm COLOR CHART
8-A IC1002-3 4.8Vp-p 1V/5.0nsec.cm COLOR CHART
9-A IC1002-4 4.8Vp-p 1V/5.0nsec.cm COLOR CHART
10-A IC1002-14 1.5Vp-p 0.5V/20.0μ sec.cm COLOR CHART
11-A IC1002-15 1.5Vp-p 0.5V/20.0μ sec.cm COLOR CHART
12-A IC1002-25 4.9Vp-p 1V/20.0μ sec.cm COLOR CHART
13-A IC1002-26 4.9Vp-p 1V/20.0μ sec.cm COLOR CHART
14-A IC1002-32 400mVp-p 0.1V/20.0μ sec.cm COLOR CHART
15-A IC1002-37 550mVp-p 0.2V/20.0μ sec.cm COLOR CHART
16-A IC1002-43 2.3Vp-p 0.5V/100nsec.cm COLOR CHART
17-A IC1002-44 3.7Vp-p 1V/100nsec.cm COLOR CHART

SENSOR CIRCUIT BOARD DIAGRAM

NOTE : MARK "Ⓩ" IS LEADLESS(CHIP) JUMPER .



SENSOR P.C.B (SIDE A)

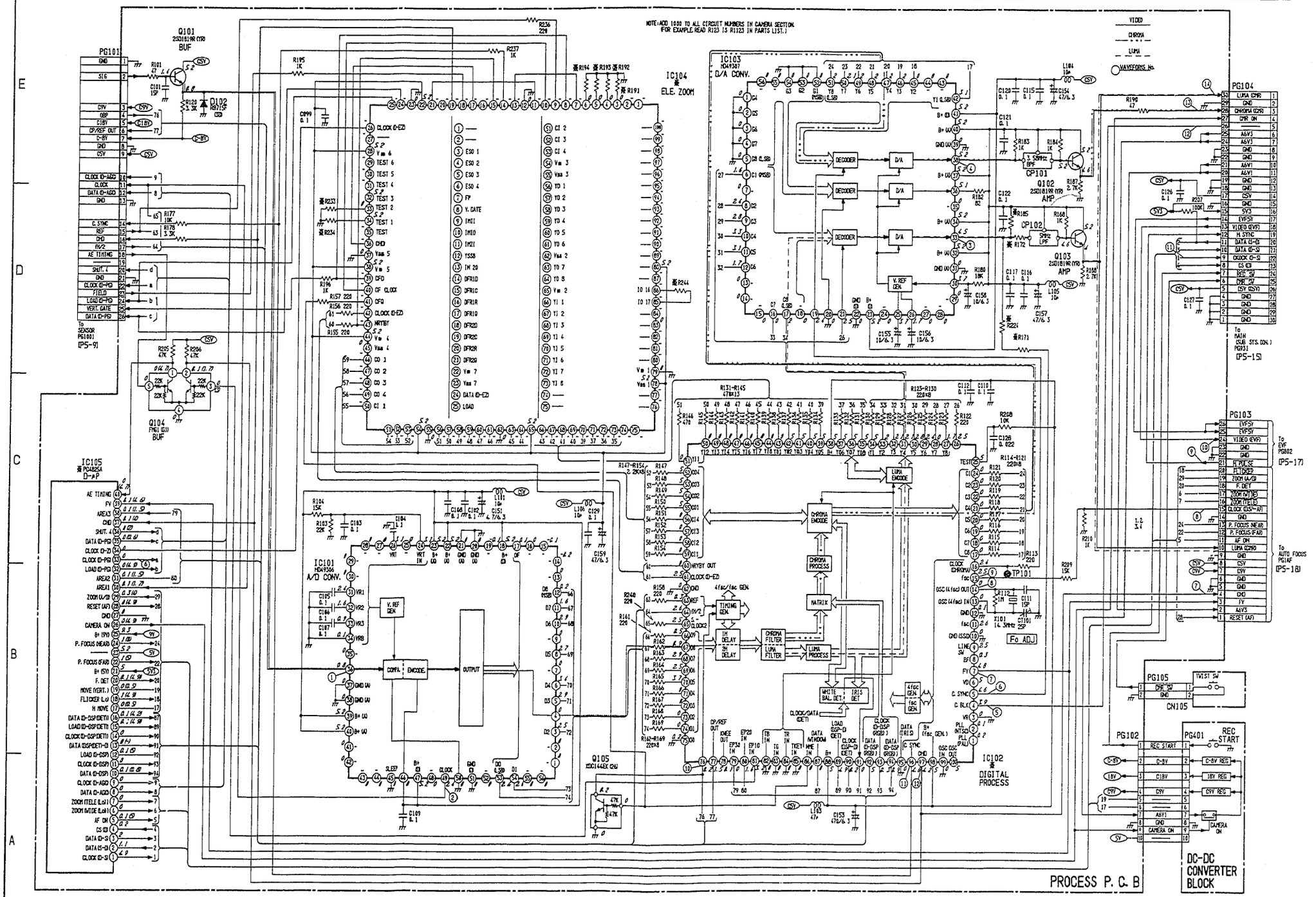


SENSOR P.C.B (SIDE B)

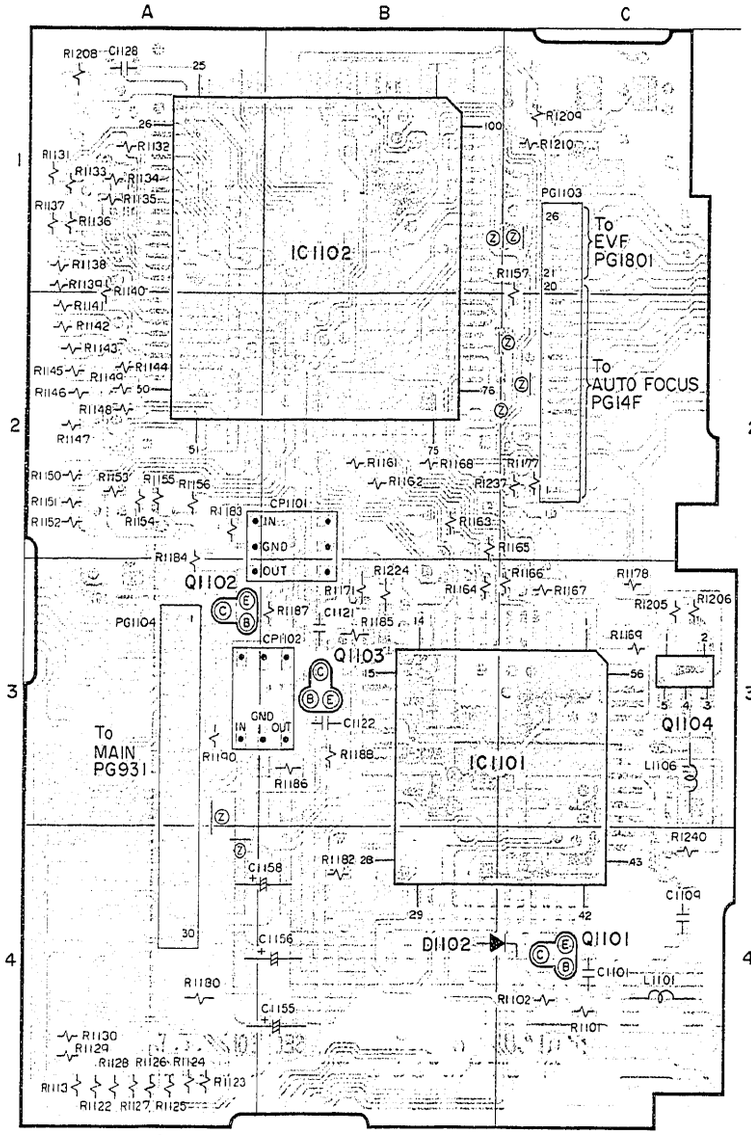
PROCESS SCHEMATIC DIAGRAM, DC-DC CONVERTER BLOCK DIAGRAM

Cautions: Parts marked * are different depending on the serial number.

Circuit No.	IC1102	IC1104	IC1105	R1171	R1172	R1185	R1191	R1193	R1194	R1224	R1233	R1234	R1244
xxx04000 and before	HG51A002A P#1354771	HG51A004	PQ4825A P#1354961	None	0Ω	1kΩ	None	0Ω	None	None	None	None	None
xxx04001 and later	HG51A002A P#1354701	HG51A007FB	PQ4825A P#1354962	1kΩ	270Ω	820Ω	0Ω	None	0Ω	4.99kΩ	0Ω	0Ω	0Ω

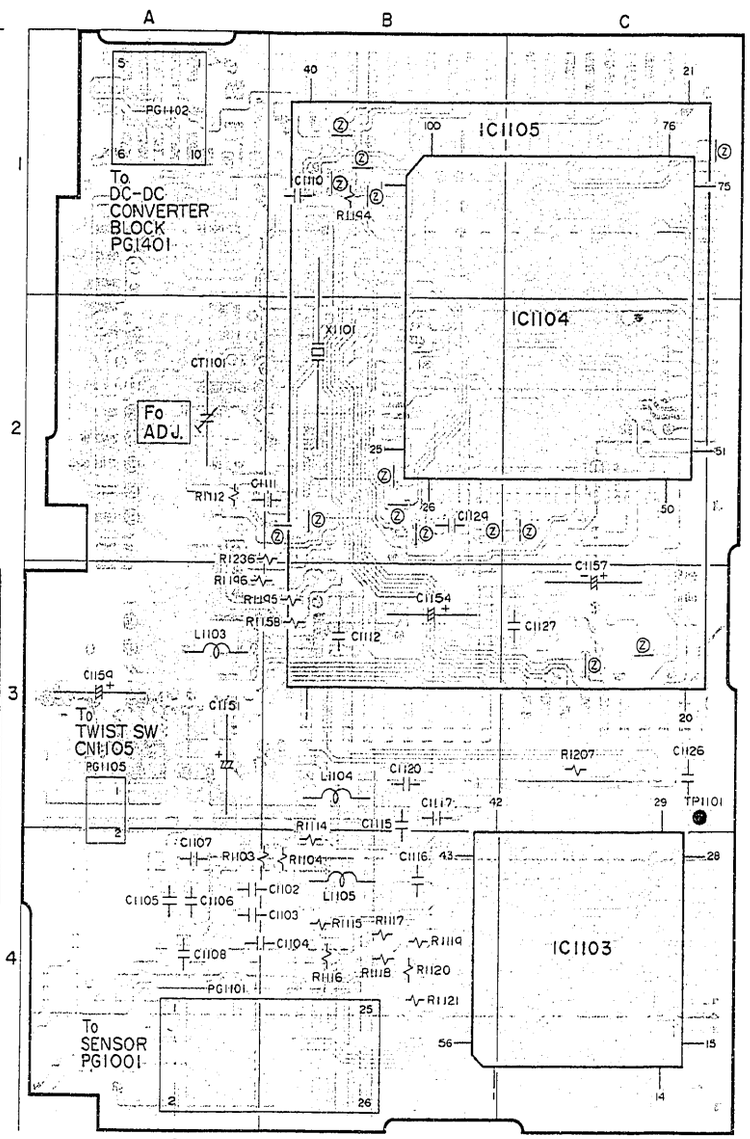


PROCESS CIRCUIT BOARD DIAGRAM



NOTE : MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

PROCESS P.C.B (SIDE A)



NOTE : MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

PROCESS P.C.B (SIDE B)

PROCESS WAVEFORMS

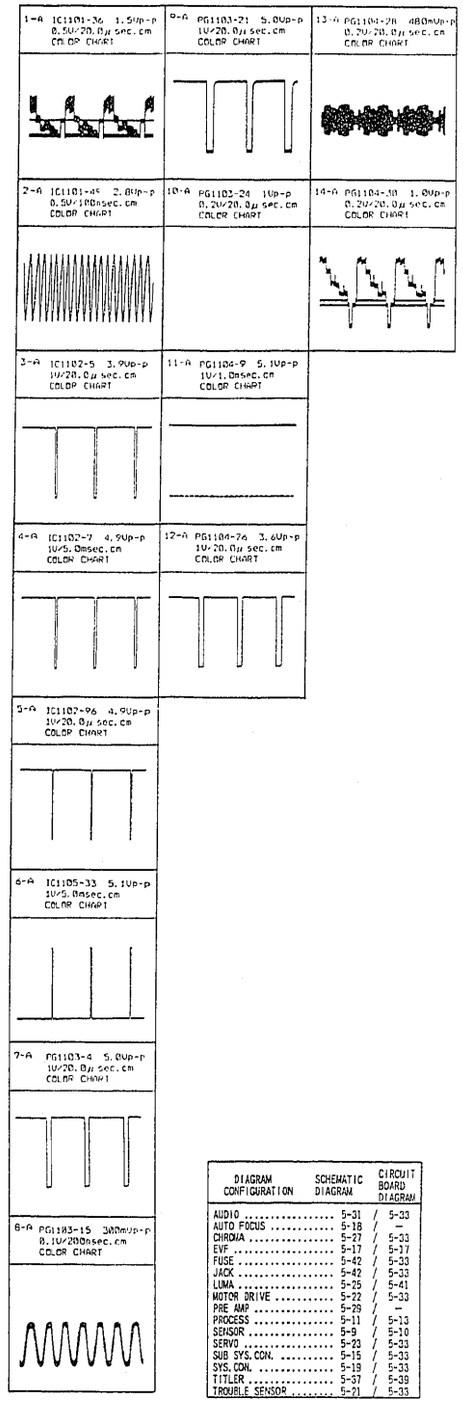
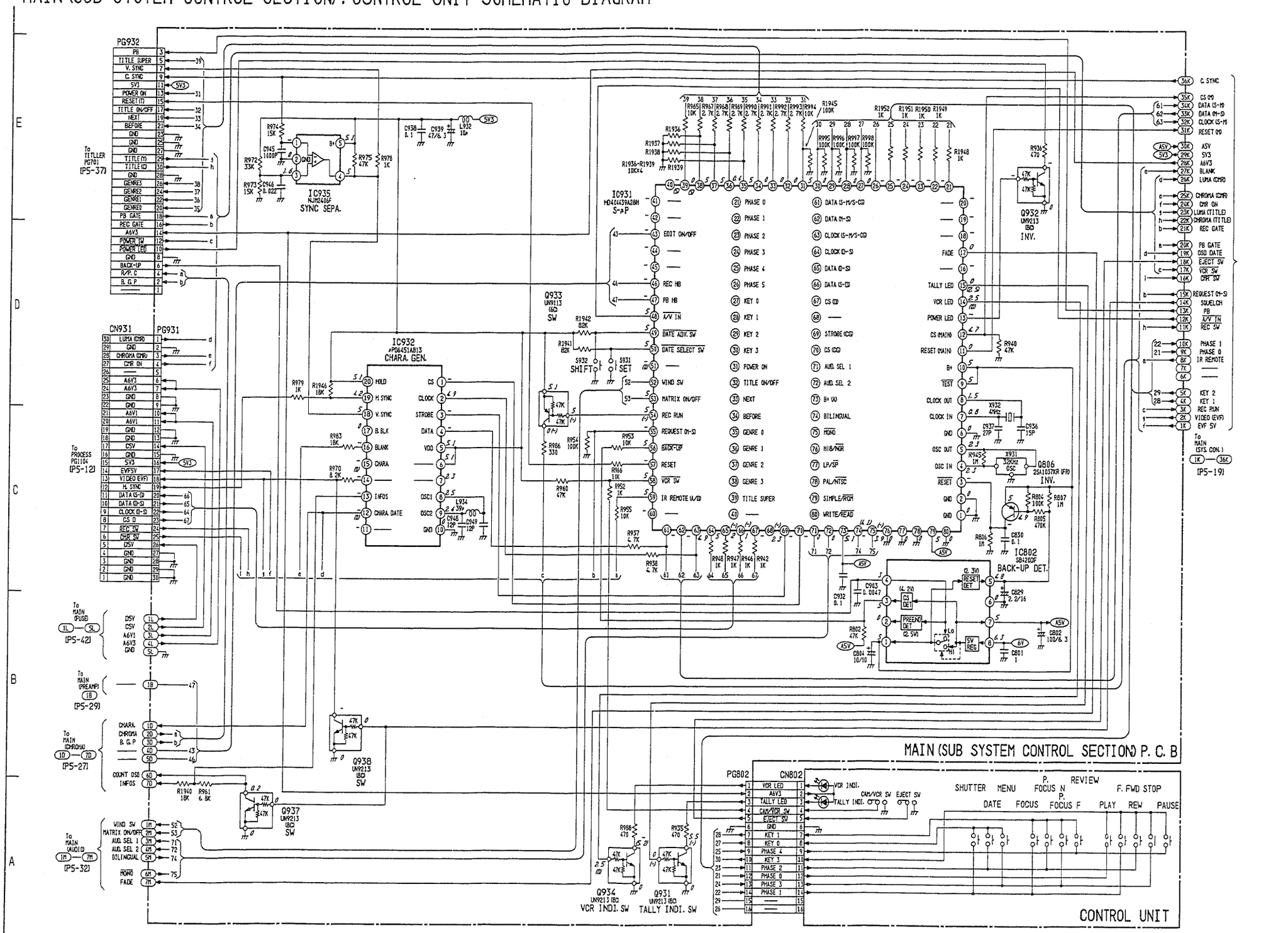
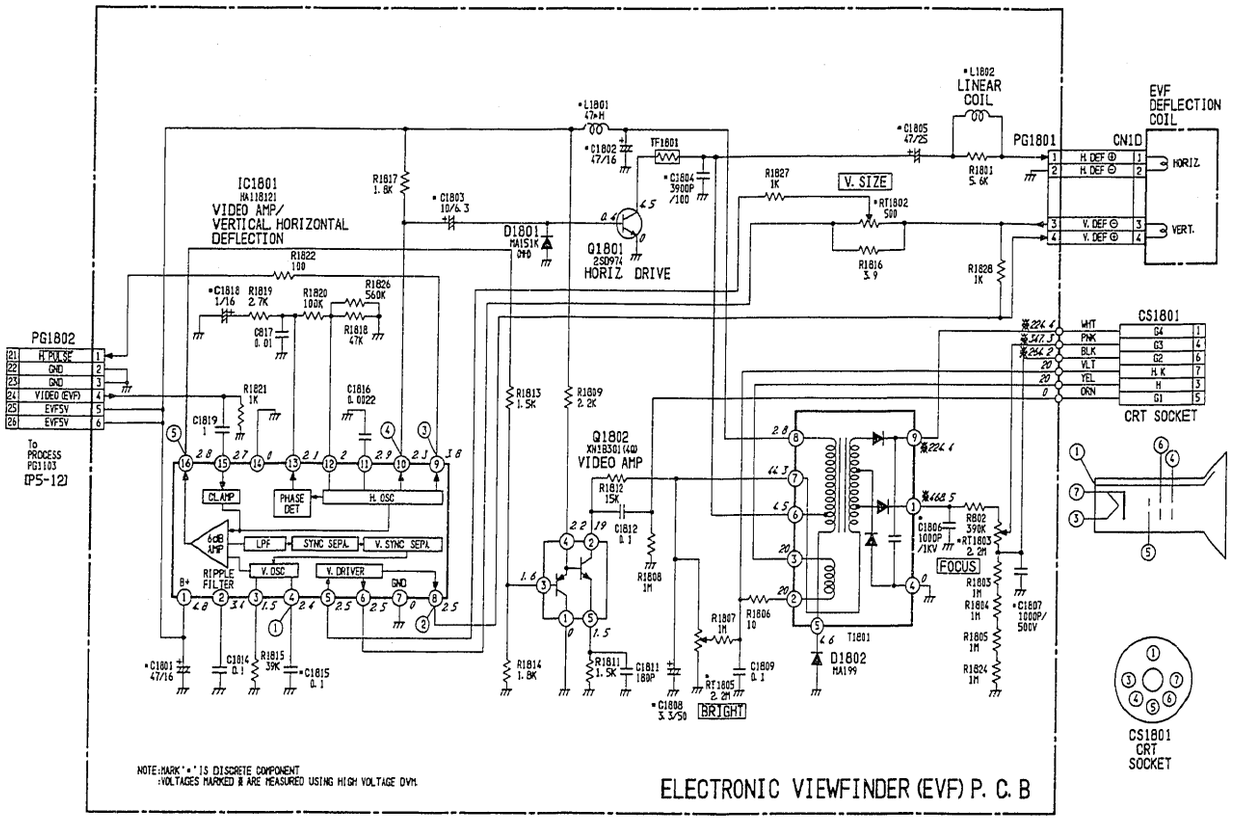

1-A IC1101-36 1.5Vp-p 0.5V/20.0μ sec.cm COLOR CHART
9-A PG1103-21 5.0Vp-p 1V/20.0μ sec.cm COLOR CHART
13-A PG1104-28 480mVp-p 0.2V/20.0μ sec.cm COLOR CHART
2-A IC1101-45 2.8Vp-p 0.5V/100nsec.cm COLOR CHART
10-A PG1102-24 1Vp-p 0.2V/20.0μ sec.cm COLOR CHART
14-A PG1104-38 1.0Vp-p 0.2V/20.0μ sec.cm COLOR CHART
3-A IC1102-5 3.9Vp-p 1V/20.0μ sec.cm COLOR CHART
11-A PG1104-9 5.1Vp-p 1V/1.0μsec.cm COLOR CHART
4-A IC1102-7 4.9Vp-p 1V/5.0μsec.cm COLOR CHART
12-A PG1104-26 3.6Vp-p 1V/20.0μ sec.cm COLOR CHART
5-A IC1102-96 4.9Vp-p 1V/20.0μ sec.cm COLOR CHART
6-A IC1105-33 5.1Vp-p 1V/5.0μsec.cm COLOR CHART
7-A PG1103-4 5.0Vp-p 1V/20.0μ sec.cm COLOR CHART
8-A PG1103-15 300mVp-p 0.1V/200nsec.cm COLOR CHART

DIAGRAM CONFIGURATION	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
AUDIO	5-31	5-33
AUTO FOCUS	5-18	—
CHROMA	5-27	5-33
EVF	5-17	5-37
FUSE	5-42	5-33
JACK	5-42	5-33
LUMA	5-25	5-41
MOTOR DRIVE	5-22	5-33
PRE AMP	5-29	—
PROCESS	5-11	5-13
SENSOR	5-9	5-10
SERVO	5-23	5-33
SUB SYS. CON.	5-15	5-33
SYS. CON.	5-19	5-33
TITLER	5-37	5-39
TROUBLE SENSOR	5-21	5-33

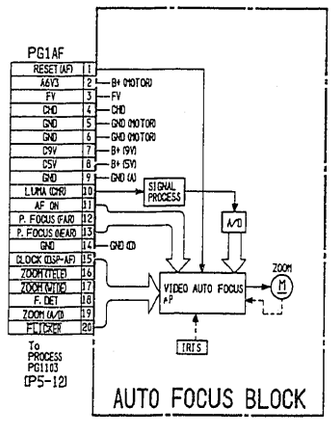
MAIN (SUB SYSTEM CONTROL SECTION). CONTROL UNIT SCHEMATIC DIAGRAM



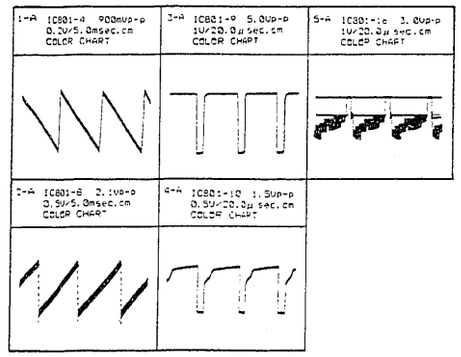
ELECTRONIC VIEWFINDER (EVF) SCHEMATIC DIAGRAM



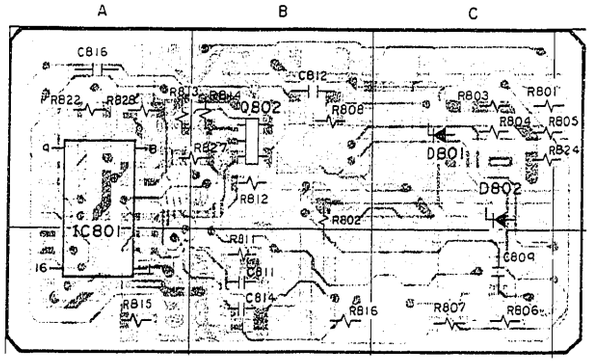
AUTO FOCUS BLOCK DIAGRAM



ELECTRONIC VIEWFINDER WAVEFORMS



ELECTRONIC VIEWFINDER (EVF) CIRCUIT BOARD DIAGRAM



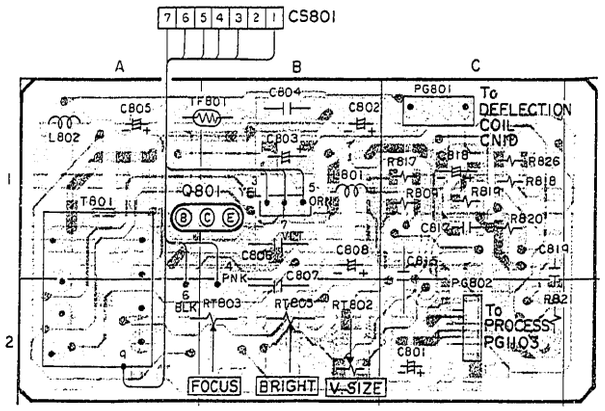
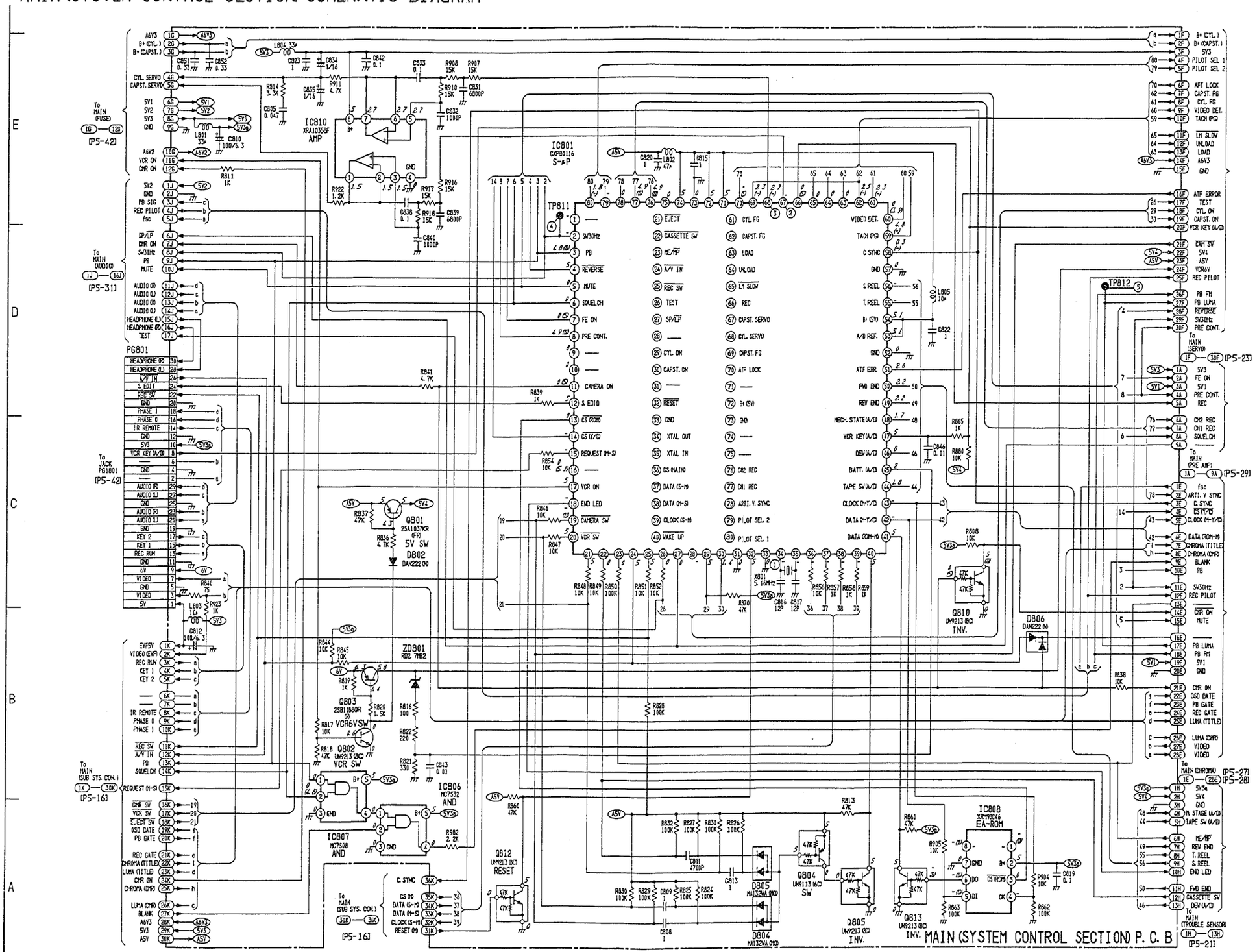
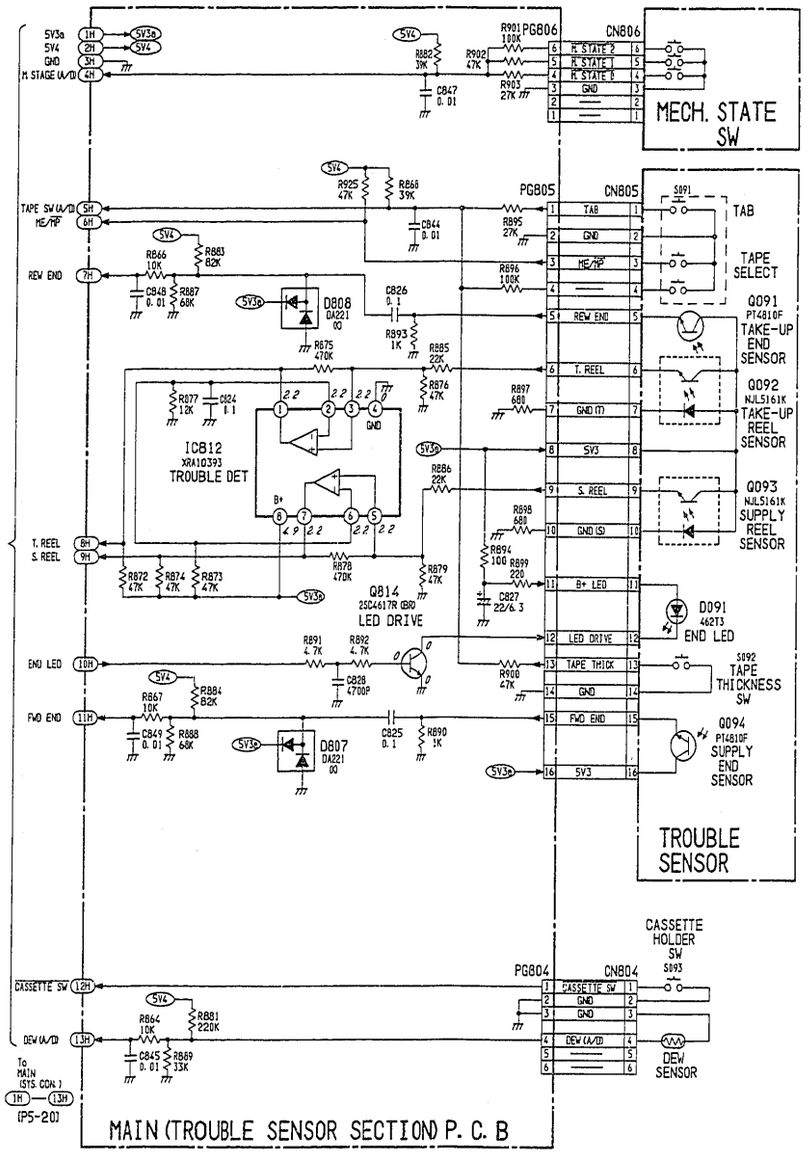


DIAGRAM CONFIGURATION	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
AUDIO	5-31	5-33
AUTO FOCUS	5-16	—
CHROMA	5-27	5-33
EVF	5-17	5-17
FUSE	5-42	5-33
JACK	5-42	5-33
LUMA	5-25	5-41
MOTOR DRIVE	5-22	5-33
PRE AMP	5-28	—
PROCESS	5-11	5-13
SENSOR	5-9	5-10
SERVO	5-23	5-33
SUB SYS.CON.	5-15	5-33
SYS.CON.	5-19	5-33
TITLER	5-37	5-39
TROUBLE SENSOR	5-21	5-33

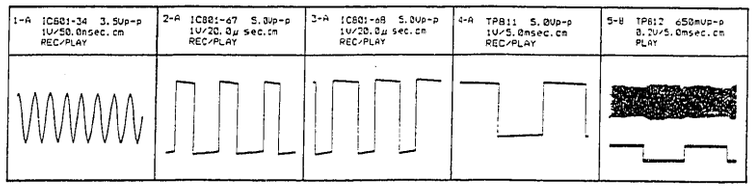
MAIN (SYSTEM CONTROL SECTION) SCHEMATIC DIAGRAM



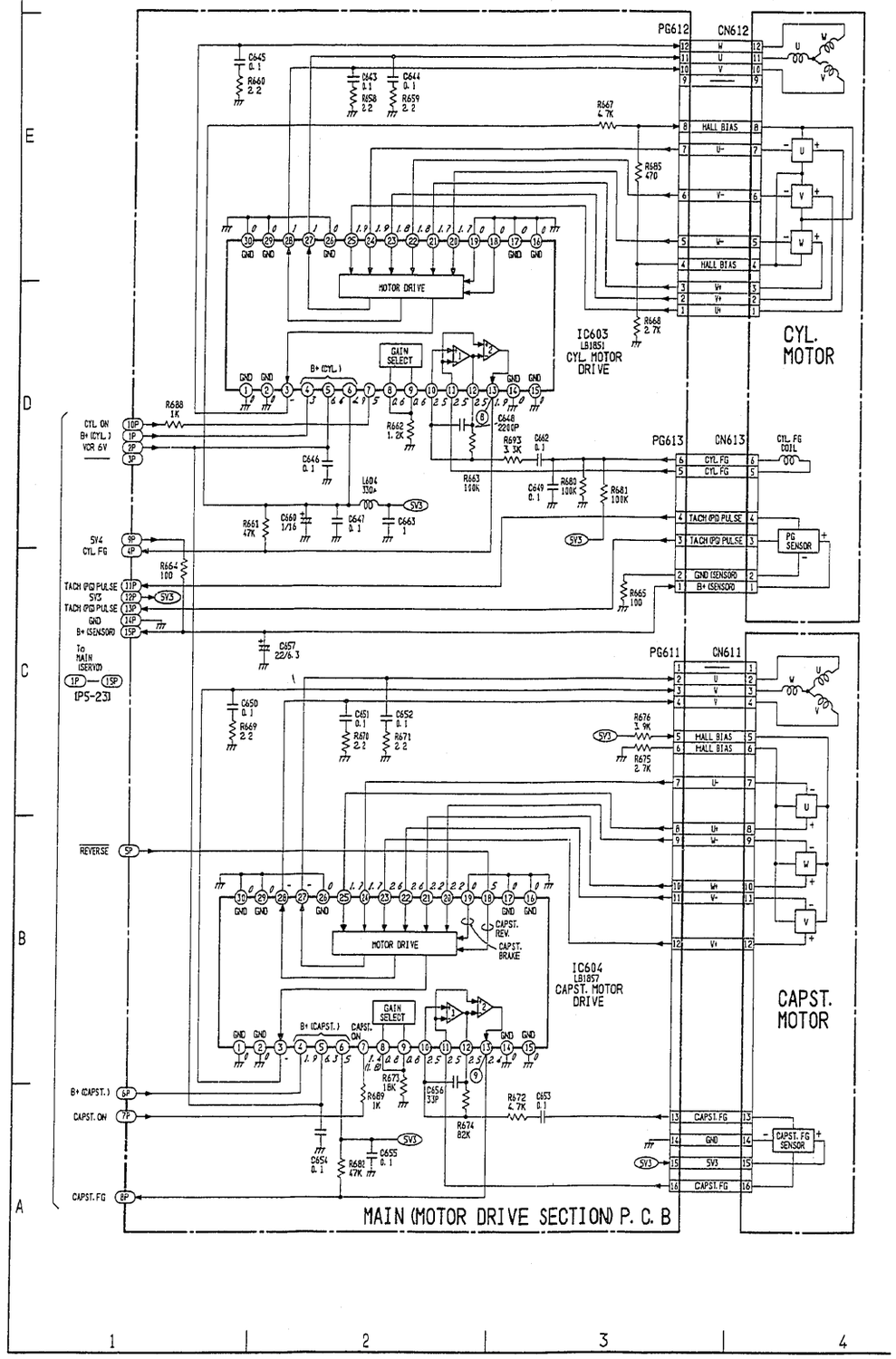
MAIN (TROUBLE SENSOR SECTION) SCHEMATIC DIAGRAM



SYSTEM CONTROL WAVEFORMS

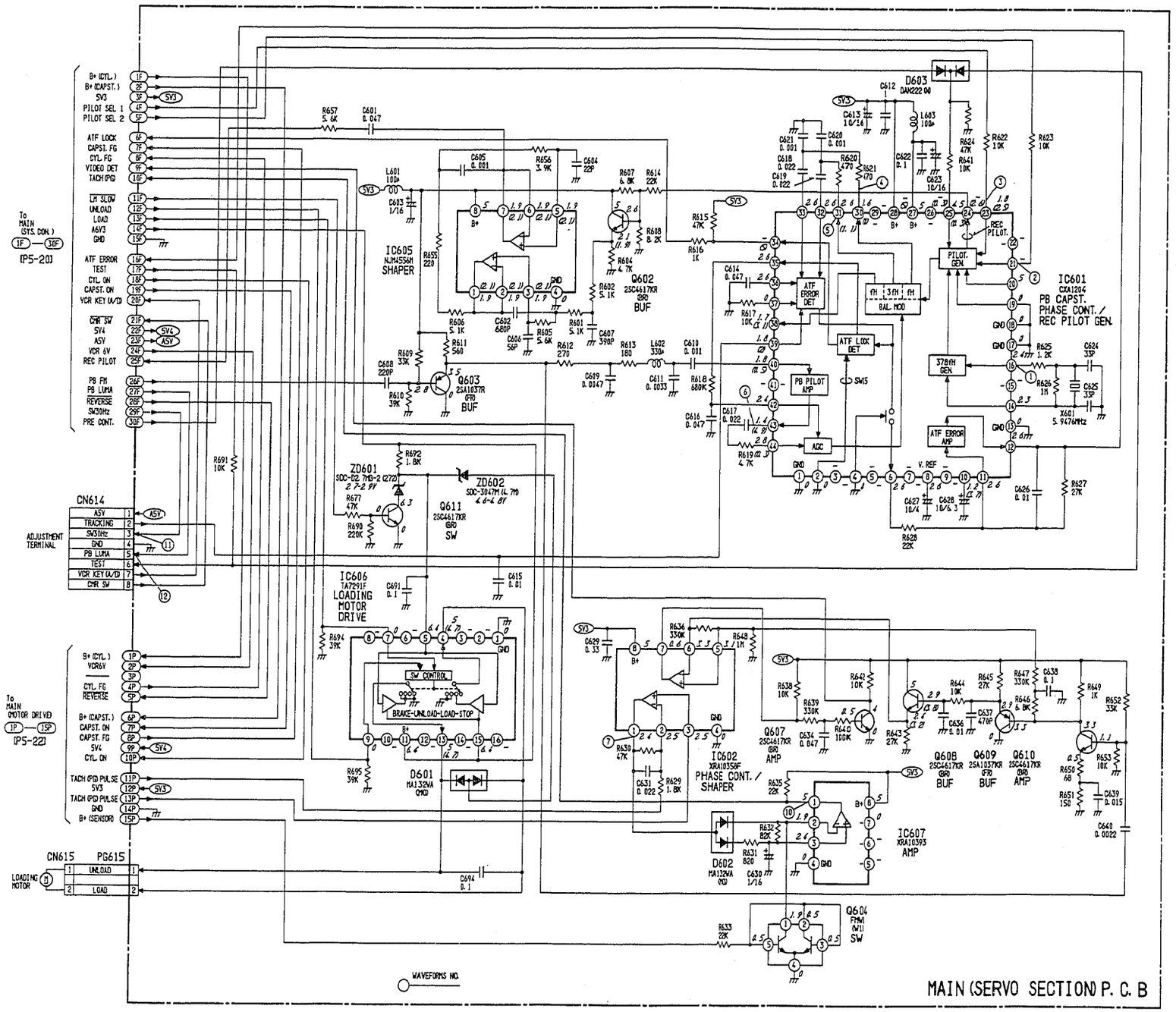

1-A IC801-34 3.5Vp-p 1V/50.0nsec.cm REC/PLAY
2-A IC801-67 5.0Vp-p 1V/20.0μ sec.cm REC/PLAY
3-A IC801-68 5.0Vp-p 1V/20.0μ sec.cm REC/PLAY
4-A TPB11 5.0Vp-p 1V/5.0msec.cm REC/PLAY
5-B TPB12 650mVp-p 0.2V/5.0msec.cm PLAY

MAIN (MOTOR DRIVE SECTION) SCHEMATIC DIAGRAM



5-22 MOTOR DRIVE

MAIN (SERVO SECTION) SCHEMATIC DIAGRAM



SERVO WAVEFORMS

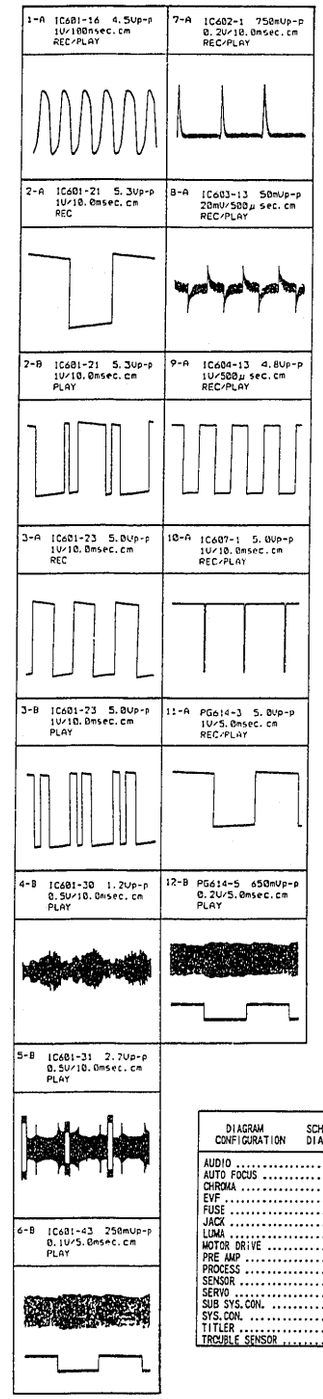
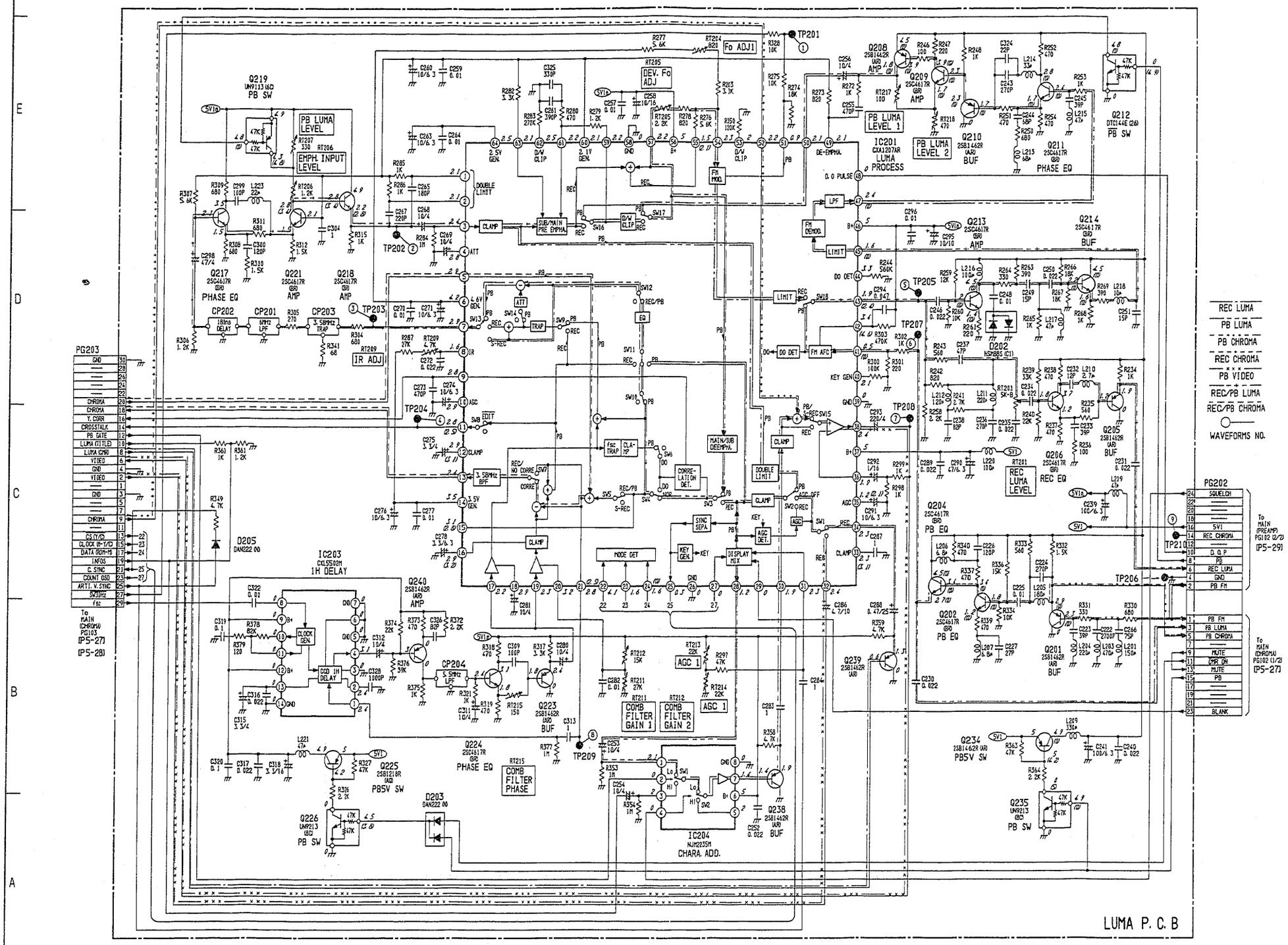
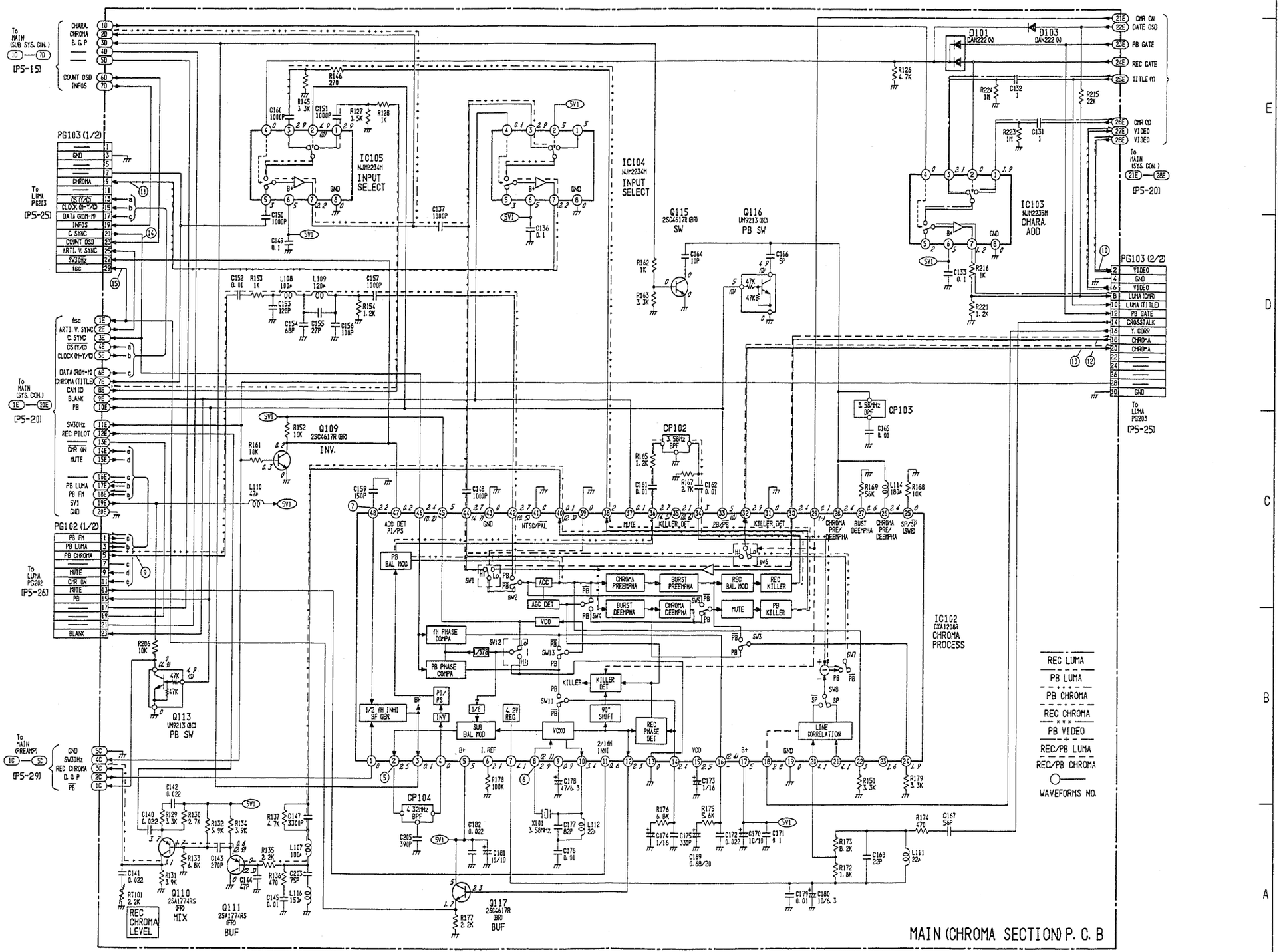

1-A IC601-16 4.5Vp-p 1V/100nsec.cm REC/PLAY
7-A IC602-1 750mVp-p 0.2V/10.0msec.cm REC/PLAY
2-A IC601-21 5.3Vp-p 1V/10.0msec.cm REC
8-A IC603-13 50mVp-p 20mV/500μsec.cm REC/PLAY
2-B IC601-21 5.3Vp-p 1V/10.0msec.cm PLAY
9-A IC604-13 4.8Vp-p 1V/500μsec.cm REC/PLAY
3-A IC601-23 5.0Vp-p 1V/10.0msec.cm REC
10-A IC607-1 5.0Vp-p 1V/10.0msec.cm REC/PLAY
3-B IC601-23 5.0Vp-p 1V/10.0msec.cm PLAY
11-A PG614-3 5.0Vp-p 1V/5.0msec.cm REC/PLAY
4-B IC601-30 1.2Vp-p 0.5V/10.0msec.cm PLAY
12-B PG614-5 650mVp-p 0.2V/5.0msec.cm PLAY
5-B IC601-31 2.7Vp-p 0.5V/10.0msec.cm PLAY
6-B IC601-43 250mVp-p 0.1V/5.0msec.cm PLAY

DIAGRAM CONFIGURATION	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
AUDIO	5-31	5-33
AUTO FOCUS	5-18	—
CHROMA	5-27	5-33
EVF	5-17	5-17
FUSE	5-42	5-33
JACK	5-42	5-33
LUMA	5-25	5-41
MOTOR DRIVE	5-22	5-33
PRE AMP	5-28	—
PROCESS	5-11	5-13
SENSOR	5-9	5-10
SERVO	5-23	5-33
SUB SYS. CON.	5-15	5-33
SYS. CONT.	5-19	5-33
TITLER	5-37	5-39
TROUBLE SENSOR	5-21	5-33

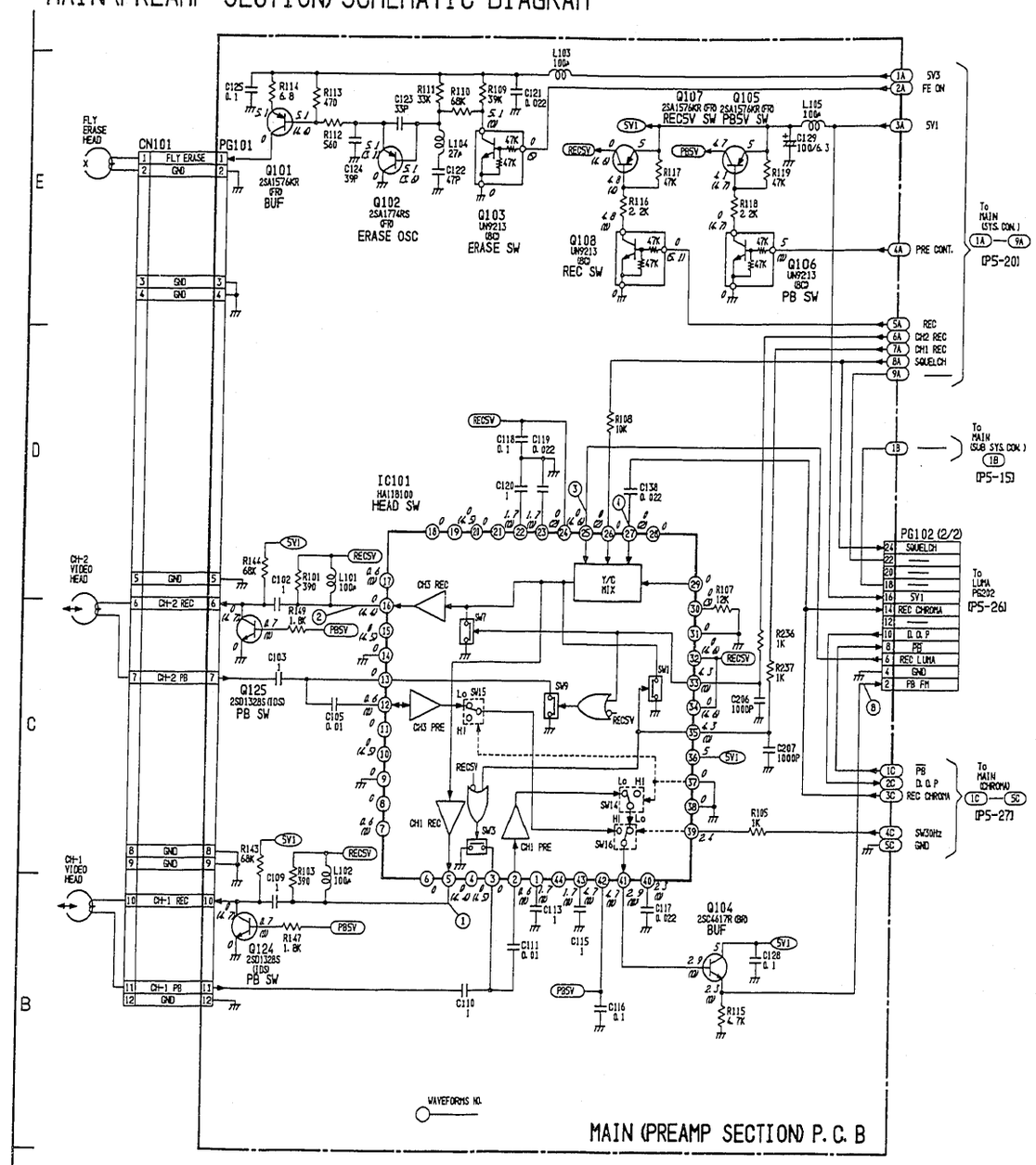
LUMA SCHEMATIC DIAGRAM



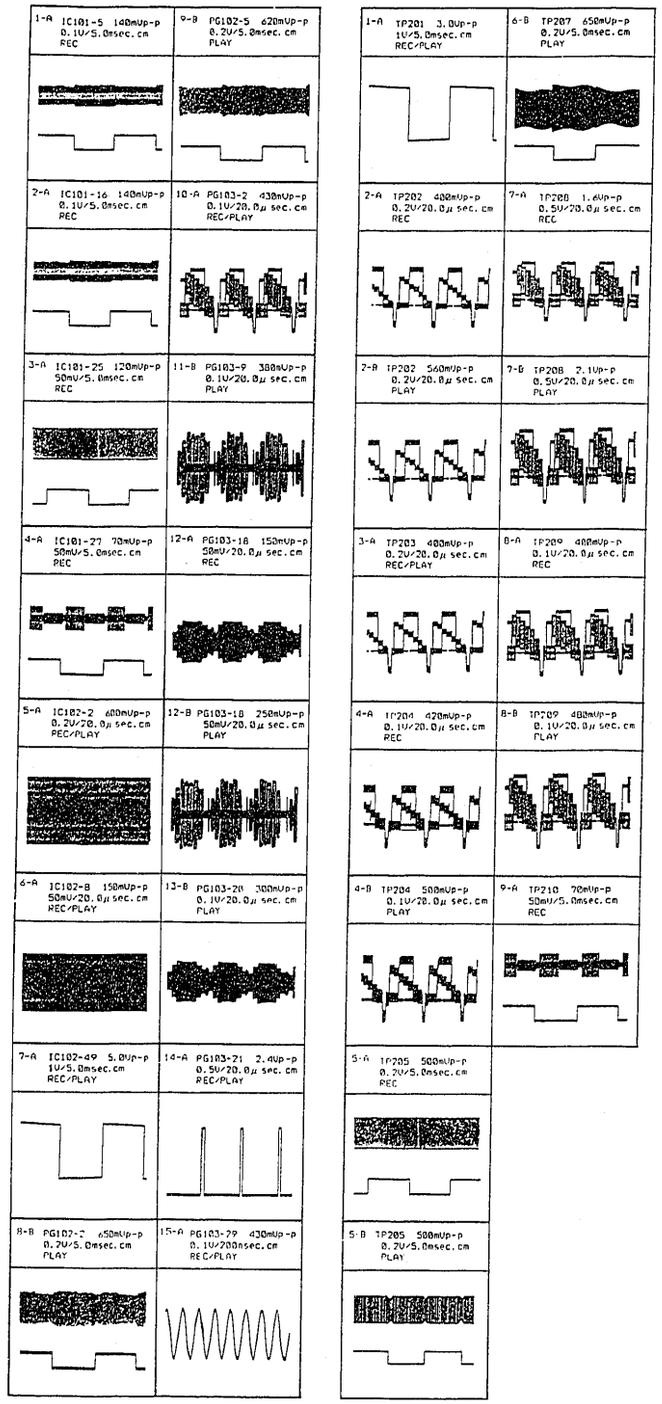
MAIN (CHROMA SECTION) SCHEMATIC DIAGRAM



MAIN (PREAMP SECTION) SCHEMATIC DIAGRAM



CHROMA/PREAMP WAVEFORMS


1-A IC101-5 140mVp-p 0.1V/5.0msec.cm REC
9-B PG102-5 620mVp-p 0.2V/5.0msec.cm PLAY
2-A IC101-16 140mVp-p 0.1V/5.0msec.cm REC
10-A PG103-2 430mVp-p 0.1V/20.0μ sec.cm REC/PLAY
3-A IC101-25 120mVp-p 50mV/5.0msec.cm REC
11-B PG103-9 380mVp-p 0.1V/20.0μ sec.cm PLAY
4-A IC101-27 70mVp-p 50mV/5.0msec.cm REC
12-A PG103-18 150mVp-p 50mV/20.0μ sec.cm REC
5-A IC102-2 600mVp-p 0.2V/20.0μ sec.cm REC/PLAY
12-B PG103-18 250mVp-p 50mV/20.0μ sec.cm PLAY
6-A IC102-8 150mVp-p 50mV/20.0μ sec.cm REC/PLAY
13-B PG103-20 300mVp-p 0.1V/20.0μ sec.cm PLAY
7-A IC102-49 5.0Vp-p 1V/5.0msec.cm REC/PLAY
14-A PG103-21 2.4Vp-p 0.5V/20.0μ sec.cm REC/PLAY
8-B PG102-2 650mVp-p 0.2V/5.0msec.cm PLAY
15-A PG103-29 430mVp-p 0.1V/200nsec.cm REC/PLAY
1-A TP201 3.0Vp-p 1V/5.0msec.cm REC/PLAY
6-B TP207 650mVp-p 0.2V/5.0msec.cm PLAY
2-A TP202 400mVp-p 0.2V/20.0μ sec.cm REC
7-A TP208 1.6Vp-p 0.5V/20.0μ sec.cm REC
2-B TP202 560mVp-p 0.2V/20.0μ sec.cm PLAY
7-B TP208 2.1Vp-p 0.5V/20.0μ sec.cm PLAY
3-A TP203 400mVp-p 0.2V/20.0μ sec.cm REC/PLAY
8-A TP209 400mVp-p 0.1V/20.0μ sec.cm REC
4-A TP204 420mVp-p 0.1V/20.0μ sec.cm REC
8-B TP209 480mVp-p 0.1V/20.0μ sec.cm PLAY
4-B TP204 500mVp-p 0.1V/20.0μ sec.cm PLAY
9-A TP210 70mVp-p 50mV/5.0msec.cm REC
5-A TP205 500mVp-p 0.2V/5.0msec.cm REC
5-B TP205 500mVp-p 0.2V/5.0msec.cm PLAY

MAIN (AUDIO SECTION) SCHEMATIC DIAGRAM

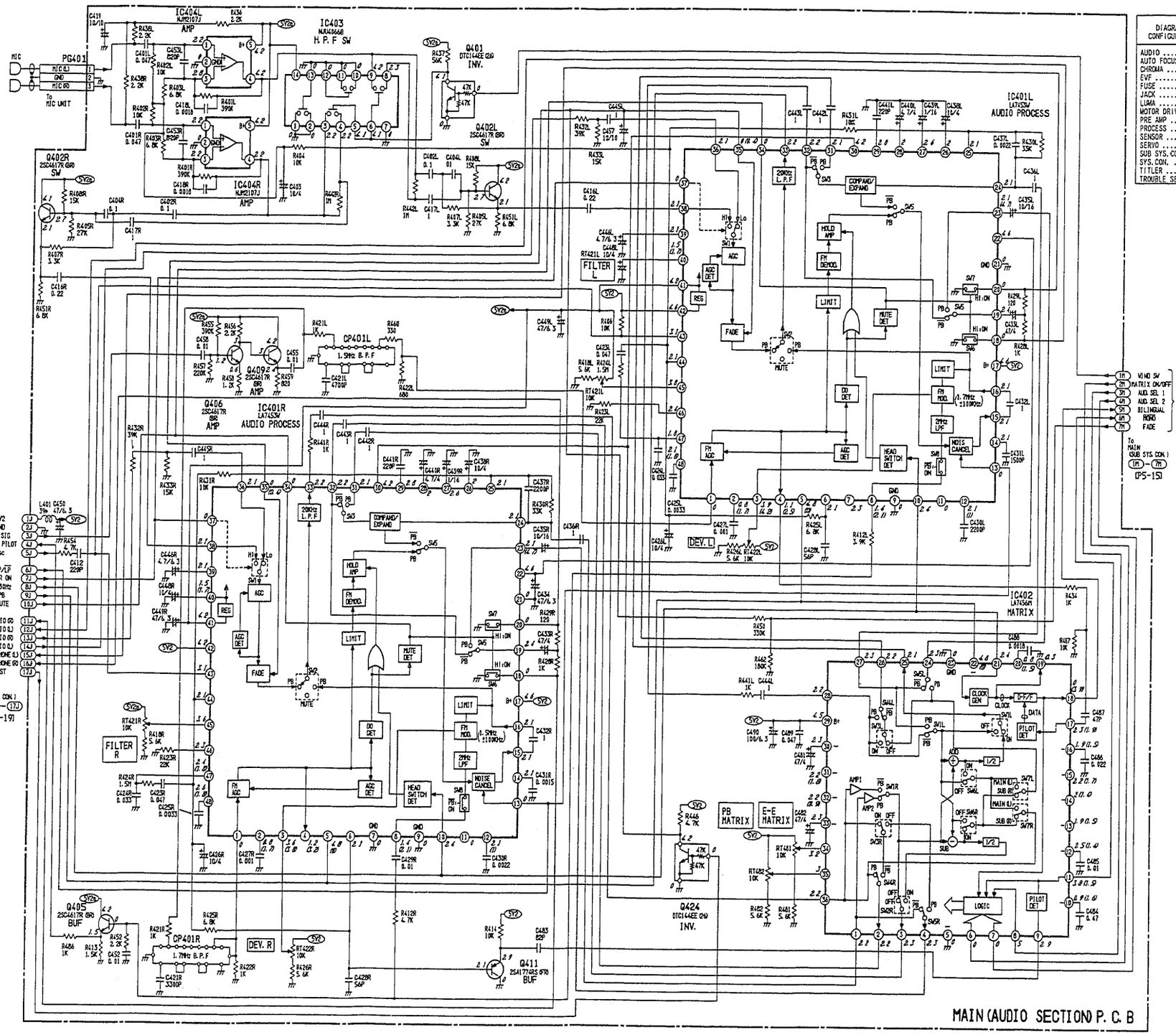
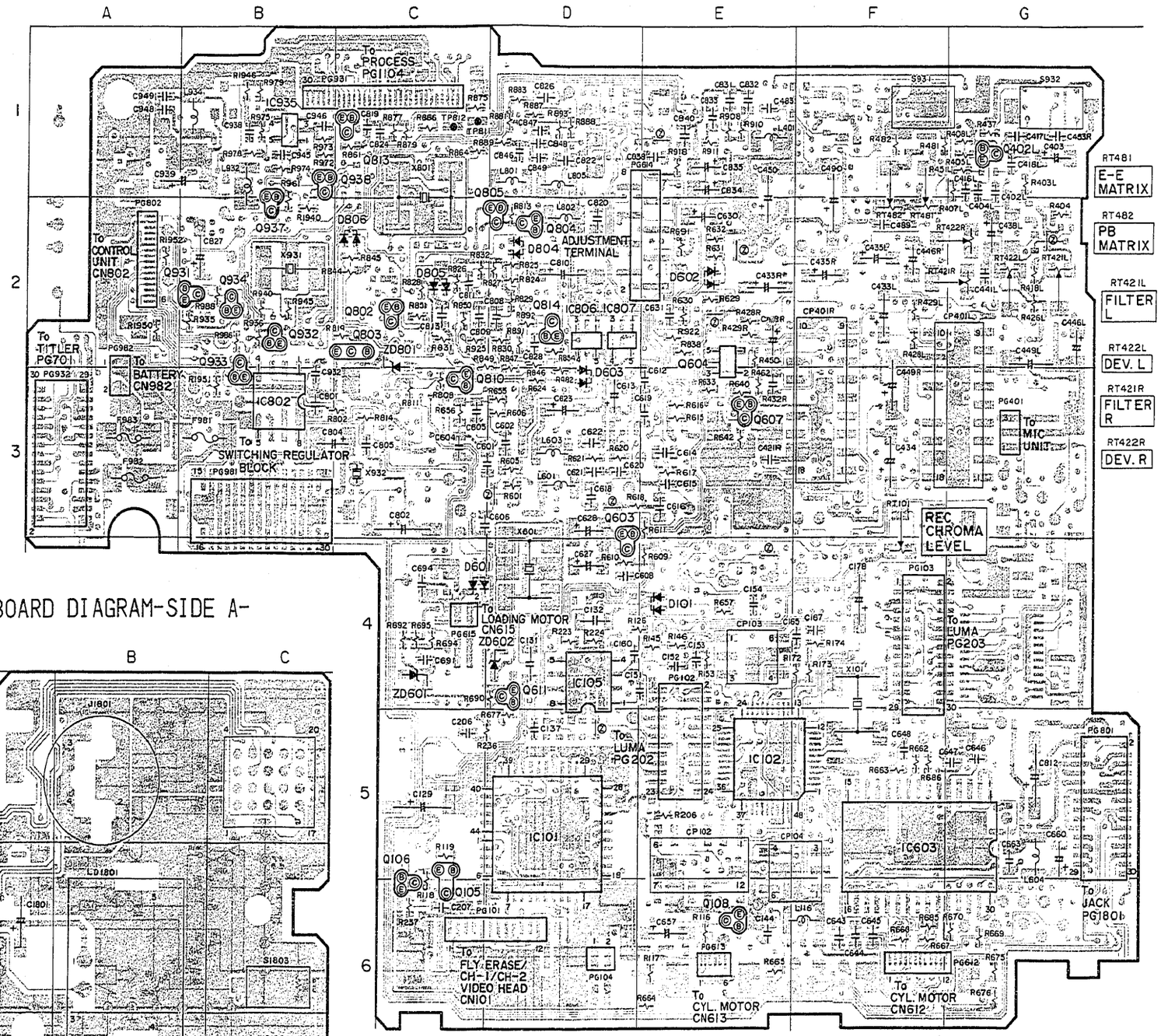


DIAGRAM CONFIGURATION	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
AUDIO	5-31	5-33
AUTO FOCUS	5-18	–
CHROMA	5-27	5-33
EVF	5-17	5-17
FUSE	5-42	5-33
JACK	5-42	5-33
LUMA	5-25	5-41
MOTOR DRIVE	5-22	5-33
PRE AMP	5-29	–
PROCESS	5-11	5-13
SENSOR	5-9	5-10
SERVO	5-23	5-33
SUB SYS. CON.	5-15	5-33
SYS. CON.	5-19	5-33
TITLER	5-37	5-39
TROUBLE SENSOR	5-21	5-33

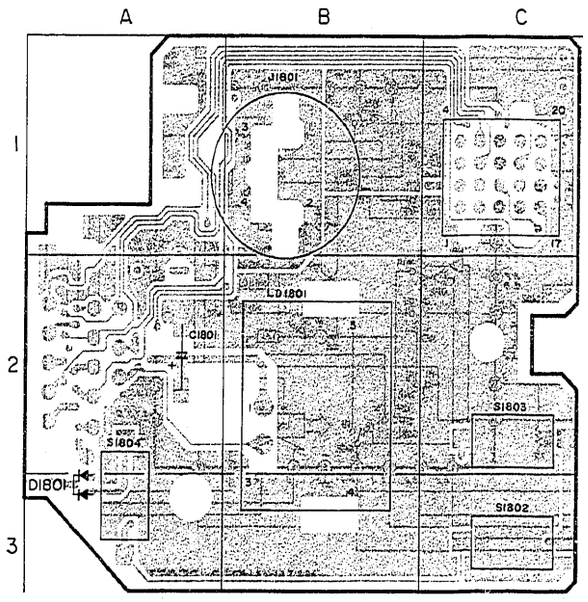
MAIN CIRCUIT BOARD DIAGRAM-SIDE A-



NOTE : MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

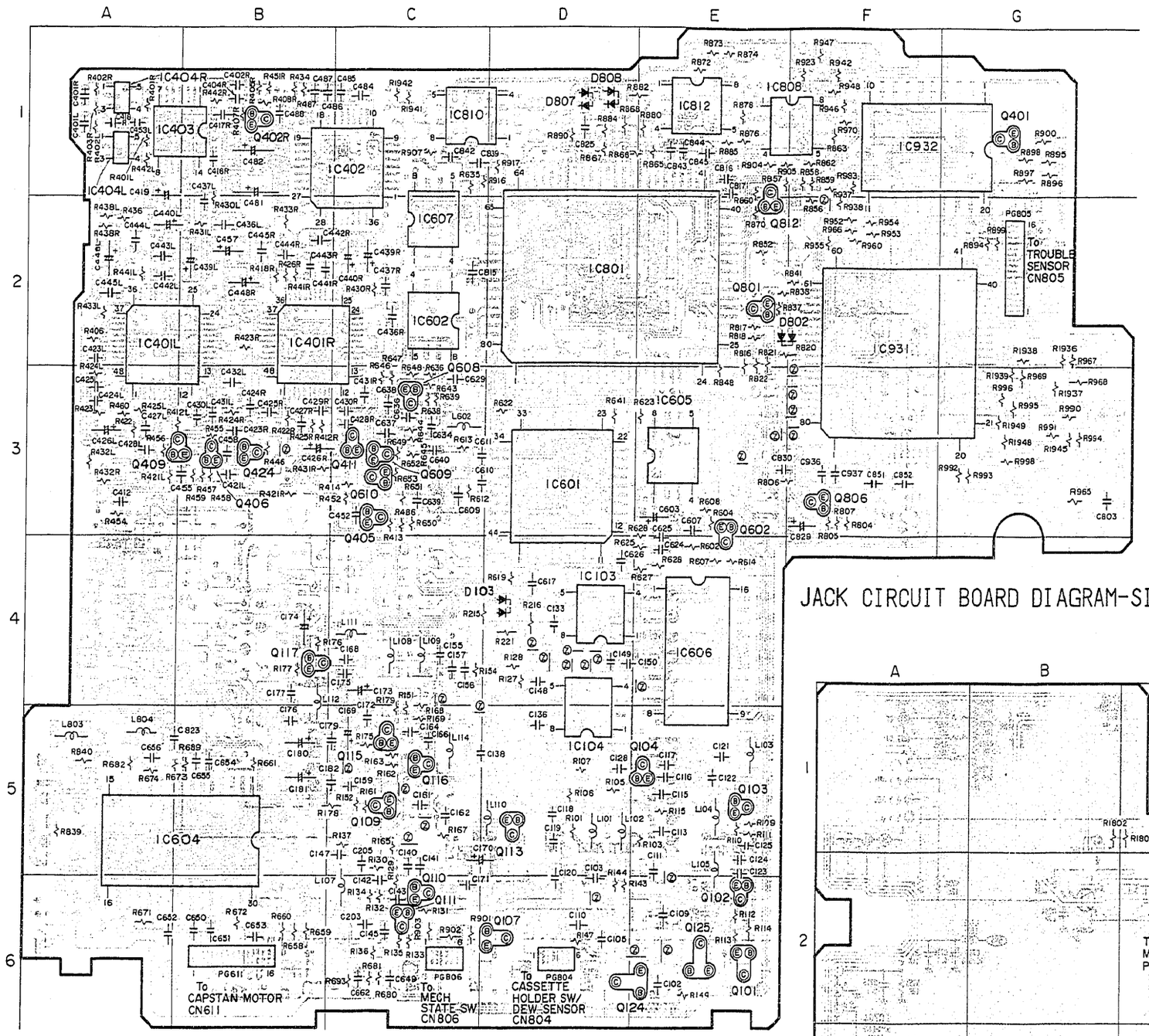
MAIN P.C.B (SIDE A)

JACK CIRCUIT BOARD DIAGRAM-SIDE A-



JACK P.C.B (SIDE A)

MAIN CIRCUIT BOARD DIAGRAM-SIDE B-

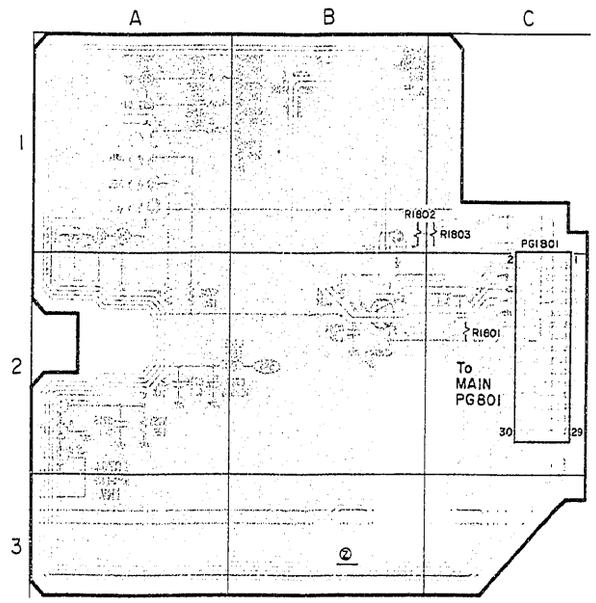


NOTE: MARK "②" IS LEADLESS (CHIP) JUMPER.

MAIN P.C.B (SIDE B)

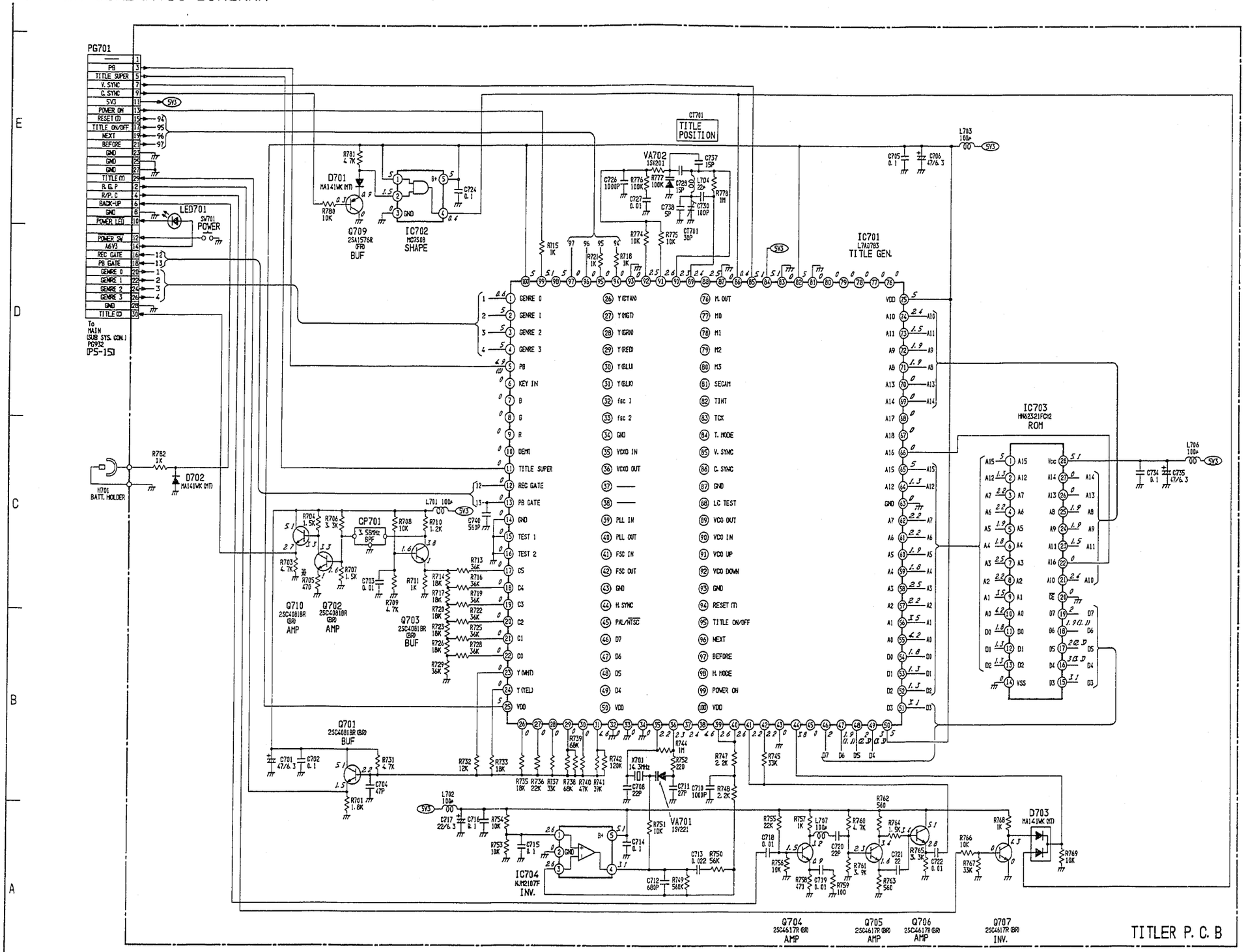
DIAGRAM CONFIGURATION	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
AUDIO	5-31	5-33
AUTO FOCUS	5-18	–
CHROMA	5-27	5-33
EVF	5-17	5-17
FUSE	5-42	5-33
JACK	5-42	5-33
LUMA	5-25	5-41
MOTOR DRIVE	5-22	5-33
PRE AMP	5-29	–
PROCESS	5-11	5-13
SENSOR	5-9	5-10
SERVO	5-23	5-33
SUB SYS. CON.	5-15	5-33
SYS. CON.	5-19	5-33
TITLER	5-27	5-39
TROUBLE SENSOR	5-21	5-33

JACK CIRCUIT BOARD DIAGRAM-SIDE B-



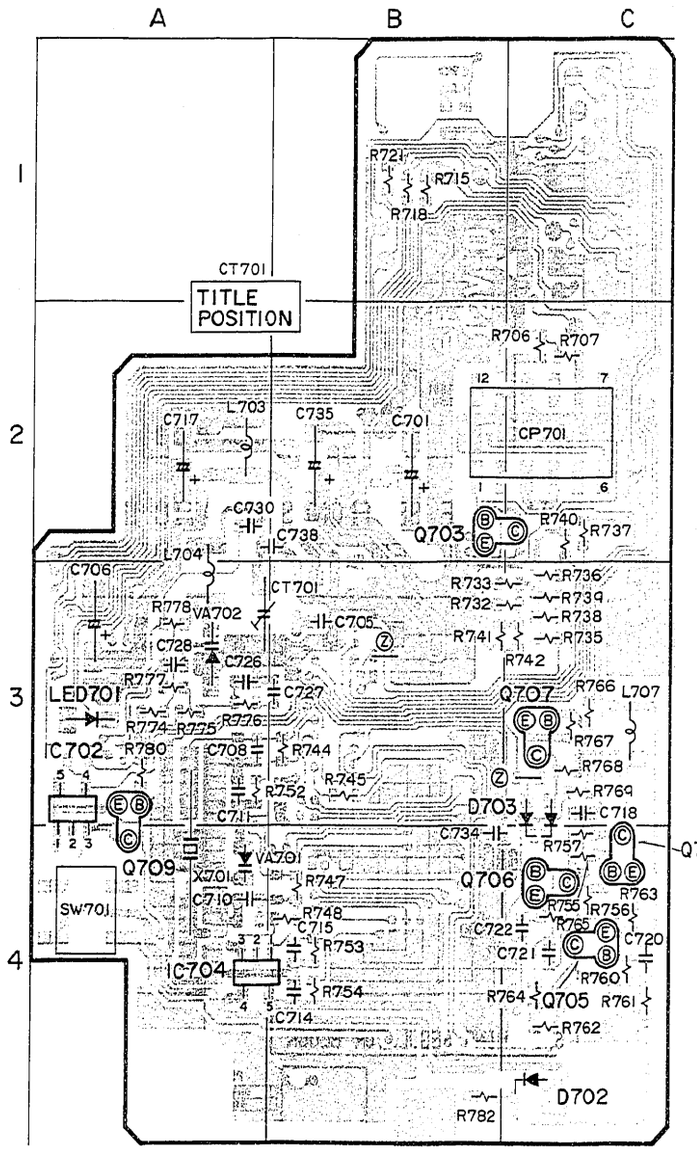
JACK P.C.B (SIDE B)

TITLER SCHEMATIC DIAGRAM



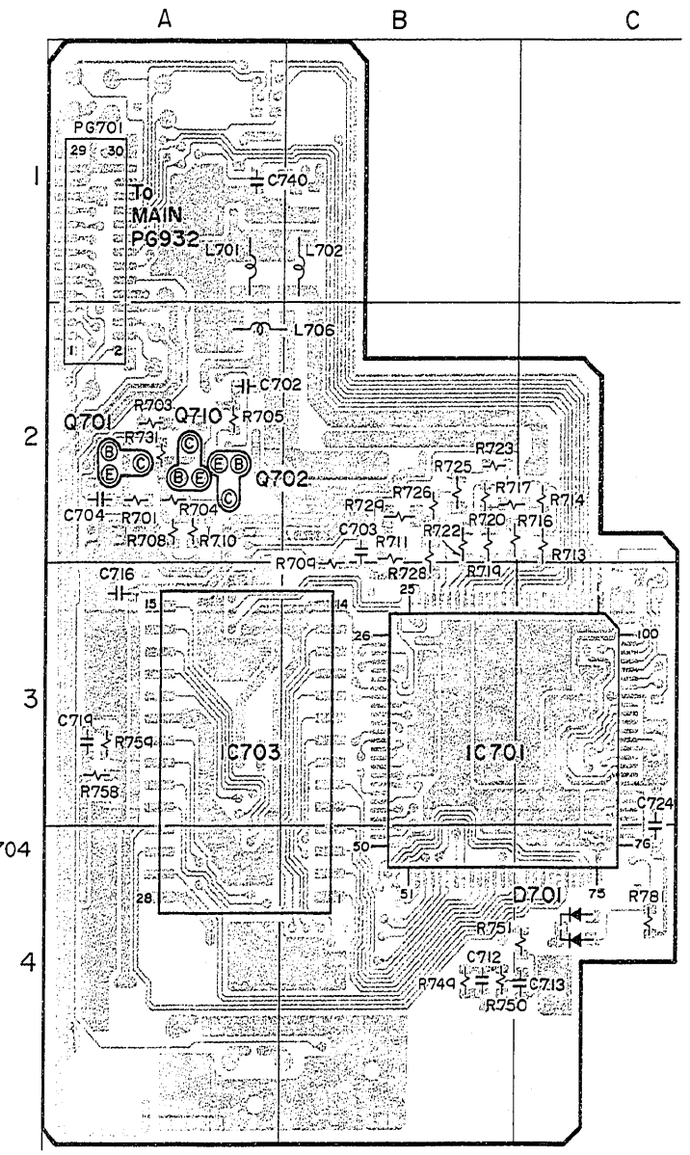
TITLER 5-37 5-38 TITLER

TITLER CIRCUIT BOARD DIAGRAM



TITLER P.C.B (SIDE A)

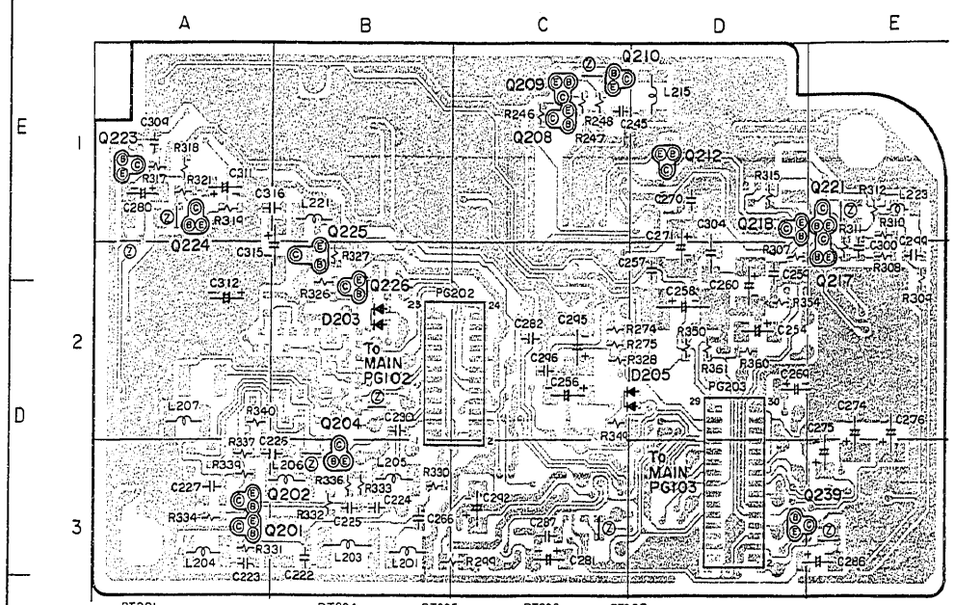
NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.



TITLER P.C.B (SIDE B)

DIAGRAM CONFIGURATION	SCHEMATIC DIAGRAM	CIRCUIT BOARD DIAGRAM
AUDIO	5-31	5-33
AUTO FOCUS	5-18	—
CHROMA	5-27	5-33
EVF	5-17	5-17
FUSE	5-42	5-33
JACK	5-42	5-33
LUMA	5-25	5-41
MOTOR DRIVE	5-22	5-33
PRE AMP	5-29	—
PROCESS	5-11	5-13
SENSOR	5-9	5-10
SERVO	5-23	5-33
SUB SYS. CON.	5-15	5-33
SYS. CON.	5-19	5-33
TITLER	5-37	5-39
TROUBLE SENSOR	5-21	5-33

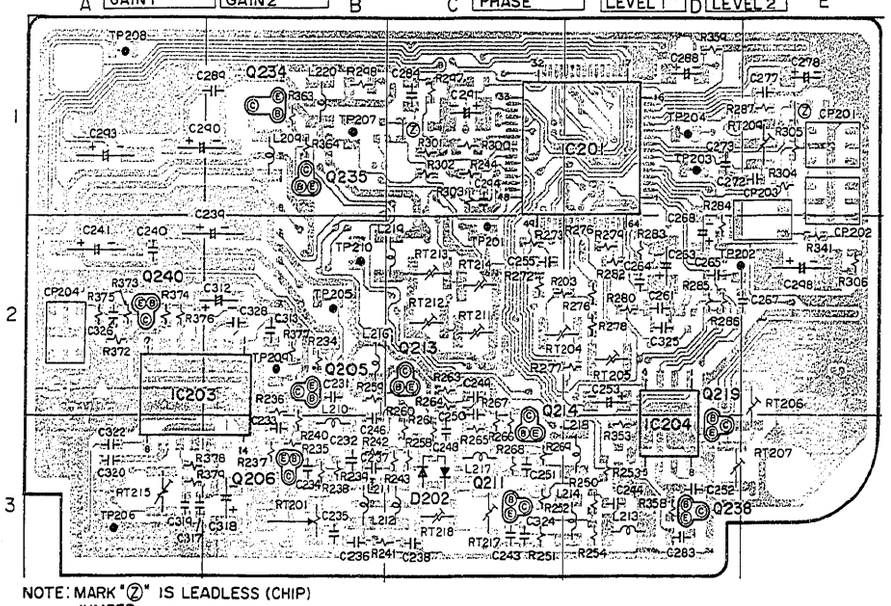
LUMA CIRCUIT BOARD DIAGRAM



RT201 REC CHROMA LEVEL
RT204 Fo ADJ 1
RT205 DEV. Fo ADJ
RT206 EMPH. INPUT LEVEL
RT207 PB LUMA LEVEL

LUMA P.C.B (SIDE A)

RT209 IR ADJ
RT211 COMB FILTER GAIN 1
RT212 COMB FILTER GAIN2
RT213 AGC 1
RT214 AGC 2
RT215 COMB FILTER PHASE
RT217 PB LUMA LEVEL 1
RT218 PB LUMA LEVEL 2


A
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C
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Q214
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Q211
Q236
C201
IC203
IC204
D202
TP208
TP207
TP210
TP209
TP206
TP204
TP203
TP202
TP205
CP201
CP202
CP203
CP204
C289
C293
C240
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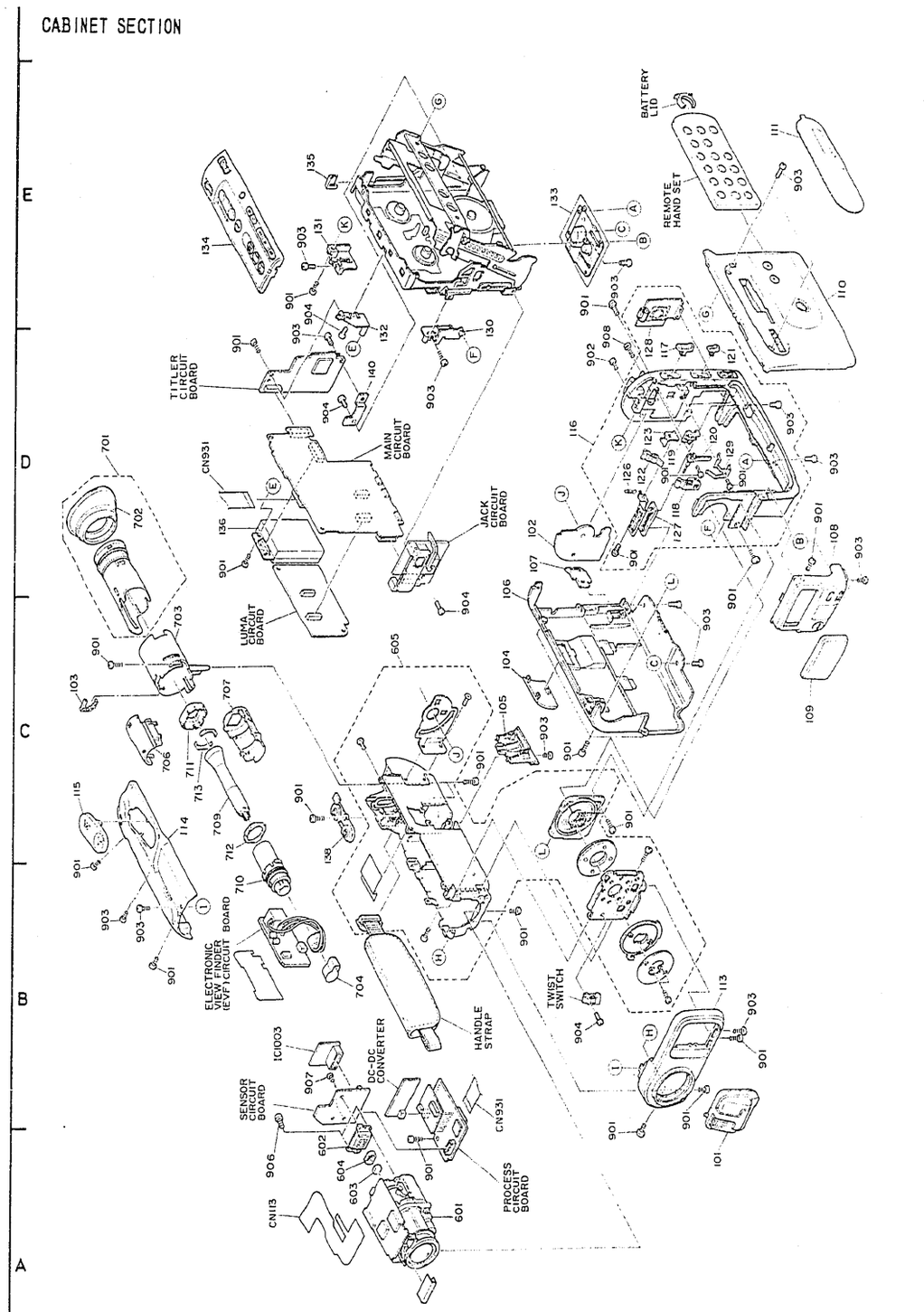
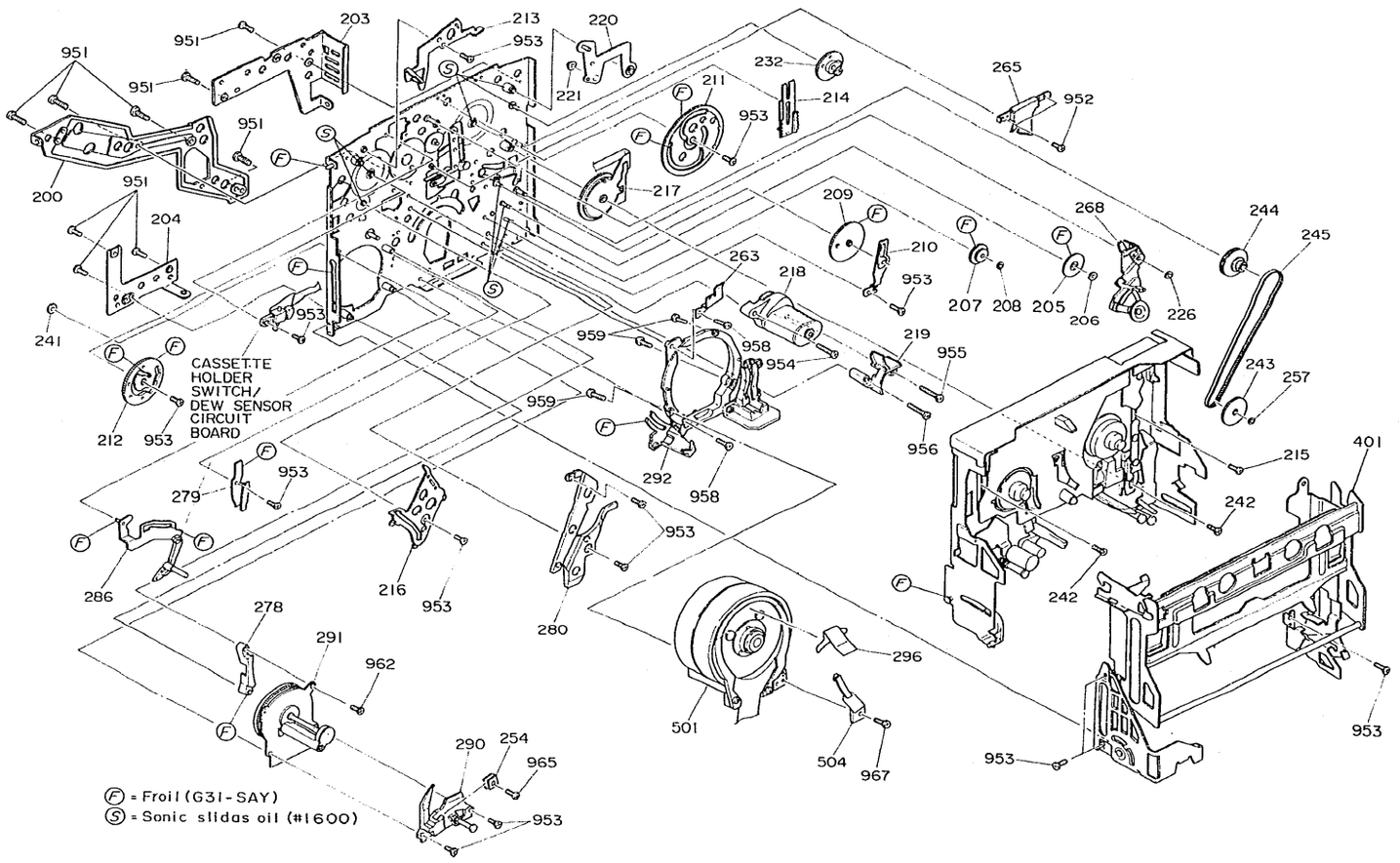
C360
C361
C362
C363
C364
C365
C366
C367
C368

CHAPTER 6 EXPLODED VIEW

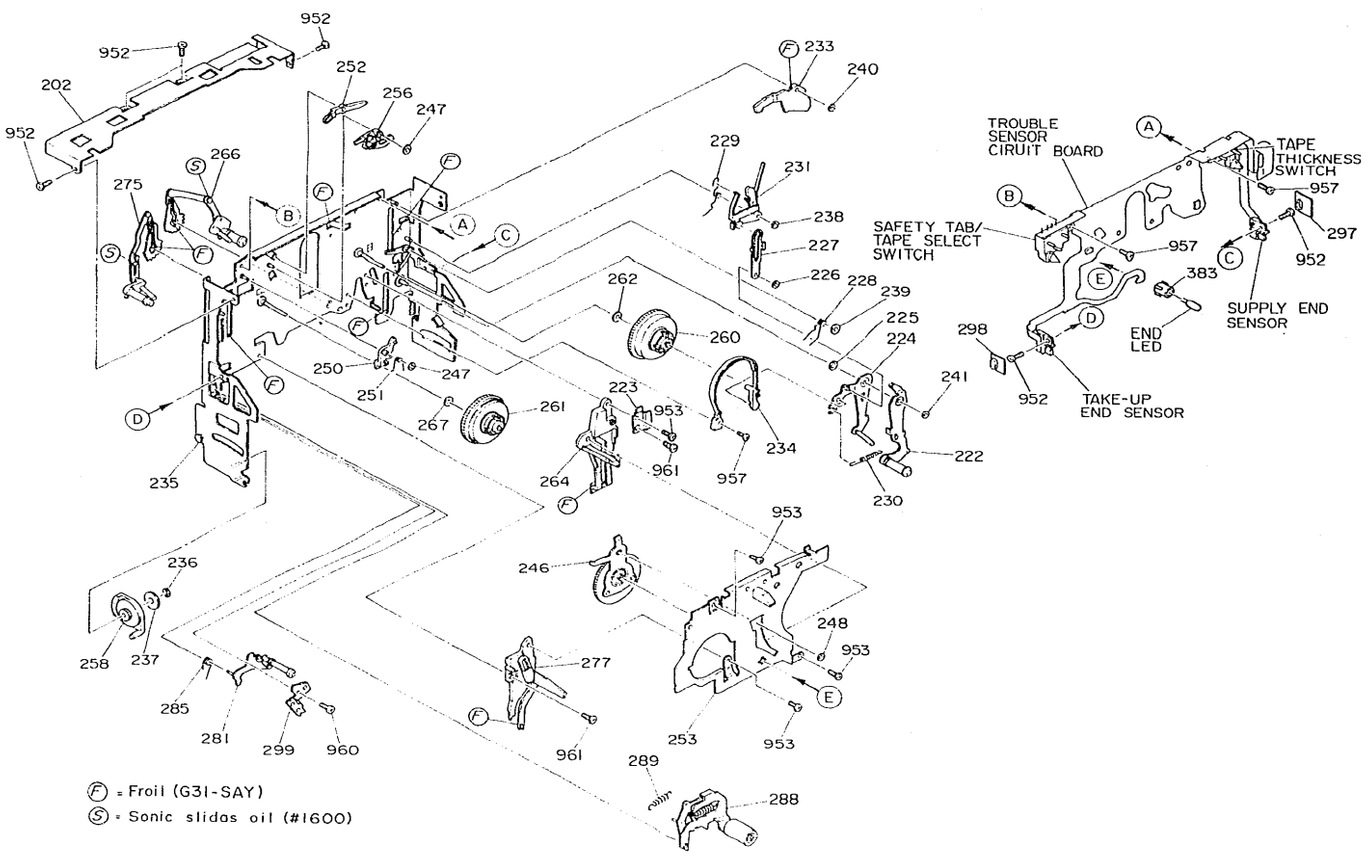
CABINET SECTION



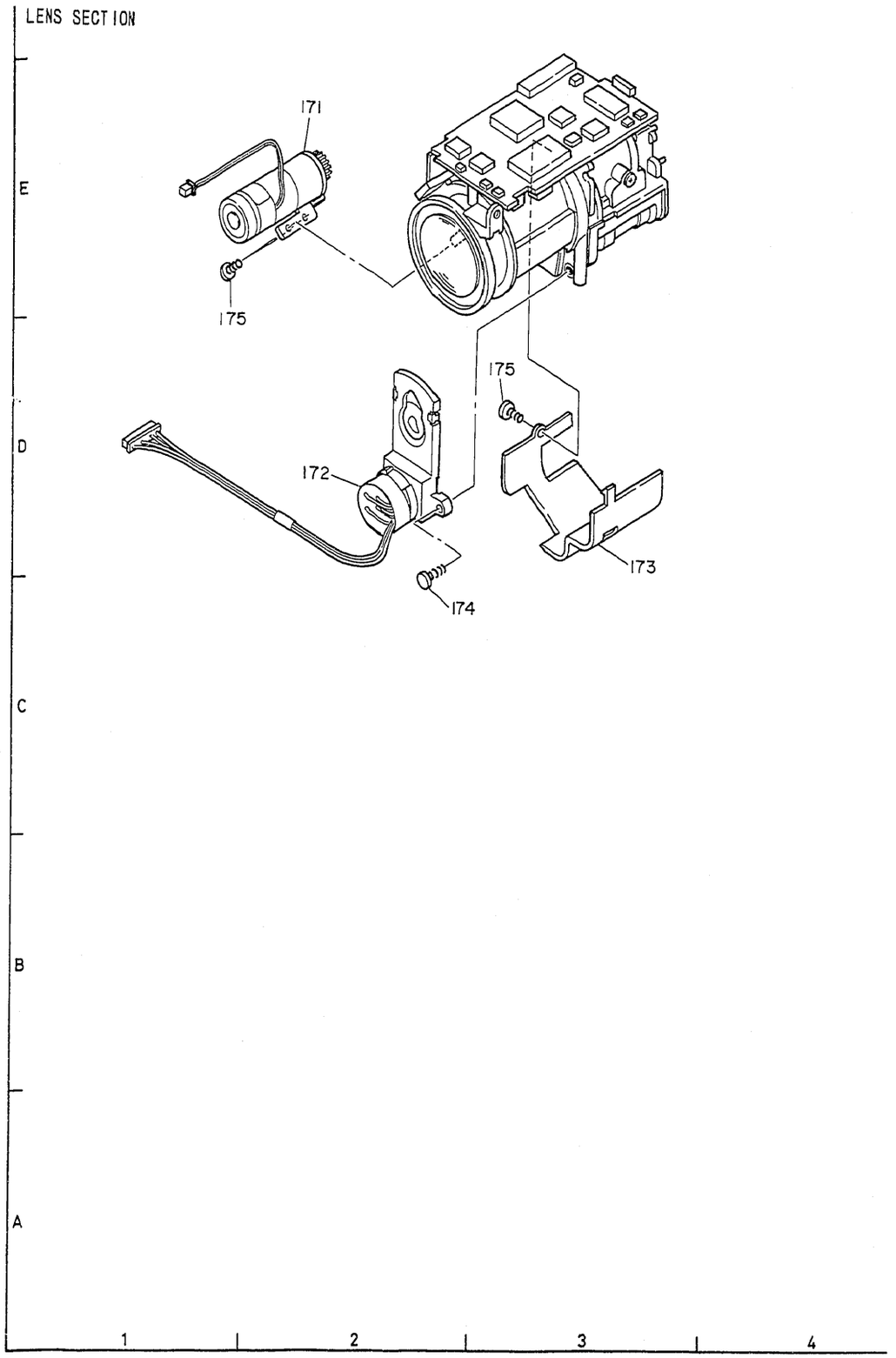
MAIN CHASSIS SECTION



SUB CHASSIS SECTION



LENS SECTION



SCREWS USED

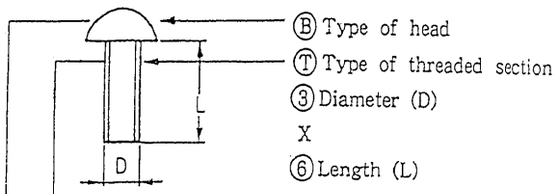
SYMBOL No.	CONFIGURATION (COLOR)	DIMENSION (mm)
215	(BLOCK)	P 1.4×2
901	(BLACK)	BT 2×5
902	(BLACK)	FT 2×10
903	(BLACK)	B 2×3
904	(BLACK)	P 2×2
906	(BLACK)	BT 1.7×5
907	(BLACK)	P 1.7×3
908	(BLACK)	FT 2×6
951		P 1.4×1.8
952	(SILVER)	P 1.4×1.6
953		P 1.4×2
954	(SILVER)	P 1.4×6
955		P 1.4×12
956		P 1.7×12
957	(BLACK)	P 1.4×2.5
958	(SILVER)	P 1.7×4
959	(BLACK)	P 2×4
960	(BLACK)	P 1.4×1.2
961		P 1.4×2
962	(SILVER)	P 1.4×2
965	(BLACK)	P 1.7×3
967	(BLACK)	P 2×4

WASHERS USED

SYMBOL No.	DIMENSION (mm)	SLIT
206	O.D.:3.6/I.D.:1.2/t:0.25	No
208	O.D.:3.0/I.D.:1.2/t:0.25	No
225	O.D.:2.5/I.D.:0.8/t:0.13	Yes
226	O.D.:3.2/I.D.:1.2/t:0.25	Yes
238	O.D.:3.6/I.D.:1.2/t:0.13	Yes
239	O.D.:4.0/I.D.:1.7/t:0.25	Yes
240	O.D.:3.6/I.D.:1.4/t:0.25	No
241	O.D.:2.5 /I.D.:0.8/t:0.13	Yes
247	O.D.:3.6/I.D.:1.0/t:0.25	No
248	O.D.:1.8/I.D.:0.8/t:0.13	Yes
257	O.D.:2.5/I.D.:0.8/t:0.25	No
262	O.D.:1.2/I.D.:1.7/t:0.13	No
267	O.D.:5.0/I.D.:2.7/t:0.25	No

SCREW CLASSIFICATION

Example : BT3 × 6

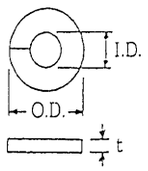


Abbre-viation	Name	Shape
No symbol	Brazier head	
P	Pan head	
B	Binding head	
O	Oval countersunk head	
F	Flat countersunk head	

Abbre-viation	Name	Shape
No symbol	Machine (clamps without tapping)	
t	Tapping (clamps with tapping) Type 1	
T	Tapping (clamps with tapping) Type 2	
f	Forming tight (for metal)	

Note Since the forming tight screw tightens while self tapping machine screws can be replaced by tapping screws.

WASHER CLASSIFICATION



LUBLICATION

Lubrication points are shown in the exploded view diagrams by marks (Ⓢ, Ⓕ).

Lubricants shown in the diagram are as follows.

Ⓢ Sonic slider oil (#1600)

Ⓕ Froil (G31-SAY)

CHAPTER 7 REPLACEMENT PARTS LEST

SYMBOL-NO	P-NO	DISCRIPTION
	MECHANISM SECTION	
101	5422522	MICROPHONE
102	6813691	BASE
103	6444131	LEVER
104	4720804	COVER
105	6815421	HOLDER
106	4713164	CASE(R)
107	7797301	BRACKET
108	4720754	COVER, FRONT
109	4720811	COVER, JACK
110	4722288	LID, CASSETTE
111	4720633	CLEAR
113	4713186	CASE, FRONT
114	4713223	CAMERA CASE ASSY (UPPER)
115	4742592	BUTTON
116	4713404	CASE(L)
117	4750972	KNOB
118	6813523	LEVER
119	6813533	BASE, KNOB
120	6813541	LEVER
121	4750981	KNOB
122	6813553	LEVER
123	6813562	BASE, KNOB
126	6558051	SRRING
127	4896293	BRACKET
128	4720744	LID, BATTERY
129	6529403	SPRING
130	6816851	HOLDER
131	6813581	HOLDER
132	6813591	HOLDER
133	6443934	HOLDER
134	5602283	FUNCTION SWITCH
135	6810901	HOLDER, FLEXIBLE
136	5274481	DC-DC CONVERTOR
138	5602312	SWITCH
140	4582411	BRACKET
171	6961232	MOTOR, ZOOM
172	6961233	IRIS
173	6961236	COVER
174	6961237	SCREW
175	6961238	SCREW
200	4581301	BRACKET
202	7473854	HOLDER
203	4581451	BRACKET
204	4581441	BRACKET
205	6347851	GEAR
206	7786213	WASHER
207	6347862	GEAR
208	7784687	WASHER
209	6916383	GEAR
210	7472722	HOLDER, GEAR
211	6349291	GEAR
212	6347882	GEAR
213	4580871	ARM, EJECT
214	4581652	RUCK
215	4523783	SCREW
216	4580893	ARM, OPERATION
217	5610864	SWITCH
218	5579302	MOTOR, LOADING
219	6822651	GUIDE
220	4581642	SLIDER
221	4522772	ROLLER
222	4581281	ARM
223	7472736	STOPPER

SYMBOL-NO	P-NO	DISCRIPTION
224	4581241	ARM
225	4340245	WASHER
226	7787571	WASHER
227	7472894	ARM
228	6553131	SPRING
229	6556433	SPRING
230	6558461	SPRING
231	4582211	ARM
232	6440371	CAM, BRAKE
233	6821274	BRAKE
234	7472712	BAND, TENTION
235	7139141	CHASSIS, SUB
236	7774942	E RING
237	6526582	SPRING
238	4340248	WASHER
239	7787575	POLYSLIDER WASHER
240	4340249	WASHER
241	4340245	WASHER
242	4523781	GUIDE
243	6440362	GEAR
244	6440341	GEAR
245	6359041	BELT
246	6500731	IDLER
247	4340243	WASHER
248	4340242	WASHER
250	6821184	ARM
251	6553191	SPRING
252	6821263	ARM
253	4580695	PLATE
254	7474974	HOLDER, ARM
256	6821234	ARM
257	4340241	WASHER
258	4581631	DUMPPER
260	6416572	REEL, SUPPLY
261	6416571	REEL, TAKE UP
262	4390561	WASHER
263	6528984	PLATE
264	6821333	RAIL, GUIDE
265	7473366	HOLDER, ARM
266	6916693	BASE, GUIDE
267	4343851	WASHER
268	6916994	
275	6916701	BASE, GUIDE ROLLER(O)
277	6821077	PLATE, GUIDE
278	6821095	RAIL, GUIDE ROLLER
279	6821104	RAIL
280	6821112	COVER
281	4581321	ARM
285	6553083	SPRING
286	4581311	ARM
288	4581181	ARM, PRESSER ROLLER
289	6556732	SPRING
290	6822902	BASE, OPERATION
291	1470031	MOTOR, CAPSTAN
292	6916642	BASE, CYLINDER
296	4341773	HOLDER, TAPE
297	4342381	SPACER
298	4343161	SPACER
299	4581232	HOLDER
383	6821222	HOLDER, LED
401	4580761	CASSETTE HOLDER ASSY
501	5436477	CYLINDER ASSY (CY-53CB-F)
504	5793831	BRUSH
601	6961081	LENS, ZOOM ASSY
602	7057131	SENSOR ASSY

SYMBOL-NO	P-NO	DISCRIPTION
603	5783261	FILTER
604	6594331	RUBBER
605	4713212	CASE, CAMERA
701	4713082	LENS, EVF
702	6443721	CAP, EYE
703	4714454	CASE, EVF
704	6815861	HOLDER
706	4713113	HOLDER
707	4713123	HOLDER
709	5319051	CRT(M01KQM07WB)
710	5242112	DEFECTION YOKE
711	4721402	COVER
712	6815812	HOLDER, CRT
713	6594411	RUBBER
901	7775945	SCREW(2X5)
902	8639110	SCREW(2X10)
903	7775963	SCREW(2X3)
904	7783151	SCREW (2X2)
906	8619003	SCREW 1.7X5
907	7783132	SCREW (1.7X3)
908	8639106	SCREW (2X6)
951	7775912	SCREW(1.4X1.8)
952	7775911	SCREW(1.4X1.6)
953	7775921	SCREW(1.4X2)
954	8712974	SCREW(1.4X6)
955	7773531	SCREW
956	7773541	SCREW
957	7775922	SCREW(1.4X2.5)
958	8700270	SCREW(1.7X4)
959	8711104	SCREW 2X4
960	8714027	SCREW(1.4X1.2)
961	7775913	SCREW (1.4X2.0)
962	8712904	SCREW (1.4X2.0)
965	7773711	SCREW
967	7783153	SCREW(2X4)

ACCESSORIES SECTION

	4131015	STRAP, SHOULDER
	5860762	CORD, AV OUTPUT
	4134145	AC ADAPTER
	4131502	POWER CORD
	4131694	RF CONVERTER
	5857961	COAXIAL RF CABLE
	5615282	REMOTE HAND SET
	5615671	LID, BATTERY
	7743691	STRAP, HANDLE

VTR SECTION

C 102	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 103	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 105	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 109	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 110	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 111	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 113	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 115	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 116	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 117	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 118	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 119	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 120	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 121	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 122	0893122	CERAMIC CHIP 47PF+-5% 50V
C 123	0893119	CERAMIC CHIP 33PF+-5% 50V
C 124	0893121	CERAMIC CHIP 39PF+-5% 50V
C 125	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 128	0893225	CERAMIC CHIP 0.1UF+80-20% 16V

SYMBOL-NO	P-NO	DISCRIPTION
C 131	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 132	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 133	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 136	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 137	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 138	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 140	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 141	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 142	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 143	0893132	CERAMIC CHIP 270PF+-5% 50V
C 144	0893122	CERAMIC CHIP 47PF+-5% 50V
C 145	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 147	0893215	CERAMIC CHIP 3300PF+-10% 50V
C 148	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 149	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 150	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 151	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 152	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 153	0893127	CERAMIC CHIP 120PF+-5% 50V
C 154	0893124	CHIP CERAMIC 68PF+-5% 50V
C 155	0893118	CERAMIC CHIP 27PF+-5% 50V
C 156	0893126	CERAMIC CHIP 100PF+-5% 50V
C 157	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 159	0893128	CERAMIC CHIP 150PF+-5% 50V
C 160	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 161	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 162	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 164	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C 165	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 166	0893107	CERAMIC CHIP 5PF+-0.25% 50V
C 167	0893123	CERAMIC CHIP 56PF+-5% 50V
C 168	0893117	CERAMIC CHIP 22PF+-5% 50V
C 171	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 172	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 175	0893133	CERAMIC CHIP 330PF+-5% 50V
C 176	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 177	0893125	CERAMIC CHIP 82PF+-5% 50V
C 179	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 203	0202158	CERAMIC CHIP 75PF+-5% 50V
C 205	0893134	CERAMIC CHIP 390PF+-5% 50V
C 206	0893126	CERAMIC CHIP 100PF+-5% 50V
C 207	0893126	CERAMIC CHIP 100PF+-5% 50V
C 222	0893214	CERAMIC CHIP 2700PF+-10% 50V
C 223	0893156	CERAMIC CHIP 39PF+-5% 50V
C 224	0893167	CERAMIC CHIP 270PF+-5% 50V
C 225	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 226	0893127	CERAMIC CHIP 120PF+-5% 50V
C 227	0893154	CERAMIC CHIP 27PF+-5% 50V
C 230	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 231	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 232	0893149	CERAMIC CHIP 12PF+-5% 50V
C 233	0893121	CERAMIC CHIP 39PF+-5% 50V
C 234	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 235	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 236	0893167	CERAMIC CHIP 270PF+-5% 50V
C 237	0893157	CERAMIC CHIP 47PF+-5% 50V
C 238	0893161	CERAMIC CHIP 82PF+-5% 50V
C 240	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 243	0893167	CERAMIC CHIP 270PF+-5% 50V
C 244	0893159	CERAMIC CHIP 68PF+-5% 50V
C 245	0893156	CERAMIC CHIP 39PF+-5% 50V
C 246	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 248	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 249	0893151	CERAMIC CHIP 15PF+-5% 50V
C 250	0893242	CERAMIC CHIP 0.022UF+80-20% 50V

SYMBOL-NO	P-NO	DISCRIPTION
C 251	0893151	CERAMIC CHIP 15PF+-5% 50V
C 252	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 255	0893171	CERAMIC CHIP 470PF+-5% 50V
C 257	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 259	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 261	0209949	CERAMIC DISC 390PF+-5% 50V
C 264	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 265	0893165	CERAMIC CHIP 180PF+-5% 50V
C 266	0202158	CERAMIC CHIP 75PF+-5% 50V
C 267	0893166	CERAMIC CHIP 220PF+-5% 50V
C 270	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 272	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 273	0893171	CERAMIC CHIP 470PF+-5% 50V
C 277	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 282	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 283	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 284	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 287	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 289	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 294	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C 296	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 299	0893126	CERAMIC CHIP 100PF+-5% 50V
C 300	0893163	CERAMIC CHIP 120PF+-5% 50V
C 304	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 309	0893126	CERAMIC CHIP 100PF+-5% 50V
C 313	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 316	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 317	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C 319	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 320	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 322	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 324	0893153	CERAMIC CHIP 22PF+-5% 50V
C 325	0893133	CERAMIC CHIP 330PF+-5% 50V
C 326	0893161	CERAMIC CHIP 82PF+-5% 50V
C 328	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 401L	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C 401R	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C 402L	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 402R	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 404L	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 404R	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 412	0893131	CERAMIC CHIP 220PF+-5% 50V
C 416L	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C 416R	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C 417L	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 417R	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 418L	0893615	CERAMIC CHIP 180PF+-5% 50V
C 418R	0893615	CERAMIC CHIP 180PF+-5% 50V
C 421L	0893217	CERAMIC CHIP 4700PF+-10% 50V
C 421R	0893215	CERAMIC CHIP 3300PF+-10% 50V
C 423L	0893188	CERAMIC CHIP 0.047UF+-10% 50V
C 423R	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C 424L	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C 424R	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C 425L	0893215	CERAMIC CHIP 3300PF+-10% 50V
C 425R	0893215	CERAMIC CHIP 3300PF+-10% 50V
C 427L	9893208	CERAMIC CHIP 1000PF+-10% 50V
C 427R	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 428L	0893123	CERAMIC CHIP 56PF+-5% 50V
C 428R	0893123	CERAMIC CHIP 56PF+-5% 50V
C 429R	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 430L	0893213	CERAMIC CHIP 2200PF+-10% 50V
C 430R	0893213	CERAMIC CHIP 2200PF+-10% 50V
C 431L	0893211	CERAMIC CHIP 1500PF+-10% 50V
C 431R	0893211	CERAMIC CHIP 1500PF+-10% 50V

SYMBOL-NO	P-NO	DISCRIPTION
C 432L	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 432R	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 436L	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 436R	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 437L	0893213	CERAMIC CHIP 2200PF+-10% 50V
C 437R	0893213	CERAMIC CHIP 2200PF+-10% 50V
C 441L	0893131	CERAMIC CHIP 220PF+-5% 50V
C 441R	0893131	CERAMIC CHIP 220PF+-5% 50V
C 442L	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 442R	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 443L	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 443R	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 444L	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 444R	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 445L	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 445R	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 452	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 453L	0893174	CERAMIC CHIP 820PF+-5% 50V
C 453R	0893174	CERAMIC CHIP 820PF+-5% 50V
C 455	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 458	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 483	0893125	CERAMIC CHIP 82PF+-5% 50V
C 484	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C 485	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C 486	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 487	0893122	CERAMIC CHIP 47PF+-5% 50V
C 488	0893212	CERAMIC CHIP 1800PF+-10% 50V
C 489	0893223	CERAMIC CHIP 0.047UF+80-20% 16V
C 601	0893023	CERAMIC CHIP 0.047UF+-10% 25V
C 602	0202157	CERAMIC CHIP 680PF+-2% 50V
C 604	0202156	CERAMIC CHIP 22PF+-2% 50V
C 605	0202023	CERAMIC CHIP 1000PF+-2% 50V
C 606	0202022	CERAMIC CHIP 56PF+-2% 50V
C 607	0202015	CERAMIC CHIP 390PF+-2% 50V
C 608	0893166	CERAMIC CHIP 220PF+-5% 50V
C 609	0893217	CERAMIC CHIP 4700PF+-10% 50V
C 610	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 611	0893215	CERAMIC CHIP 3300PF+-10% 50V
C 612	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 614	0893023	CERAMIC CHIP 0.047UF+-10% 25V
C 615	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 616	0893023	CERAMIC CHIP 0.047UF+-10% 25V
C 617	0893018	CERAMIC CHIP 0.022UF+-10% 25V
C 618	0893018	CERAMIC CHIP 0.022UF+-10% 25V
C 619	0893018	CERAMIC CHIP 0.022UF+-10% 25V
C 620	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 621	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 622	0893067	CERAMIC CHIP 0.1UF+80-20% 25V
C 624	0893119	CERAMIC CHIP 33PF+-5% 50V
C 625	0893119	CERAMIC CHIP 33PF+-5% 50V
C 626	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C 629	0893071	CERAMIC CHIP 0.33UF+80-20% 25V
C 631	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 634	0893023	CERAMIC CHIP 0.047UF+-10% 25V
C 636	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C 637	0893135	CERAMIC CHIP 470PF+-5% 50V
C 638	0893027	CERAMIC CHIP 0.1UF+-10% 25V
C 639	0893016	CERAMIC CHIP 0.015UF+-10% 25V
C 640	0893235	CERAMIC CHIP 2200PF+80-20% 50V
C 643	0893027	CERAMIC CHIP 0.1UF+-10% 25V
C 644	0893027	CERAMIC CHIP 0.1UF+-10% 25V
C 645	0893027	CERAMIC CHIP 0.1UF+-10% 25V
C 646	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 647	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 648	0893213	CERAMIC CHIP 2200PF+-10% 50V

SYMBOL-NO	P-NO	DISCRIPTION
C 649	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 650	0893027	CERAMIC CHIP 0.1UF+-10% 25V
C 651	0893027	CERAMIC CHIP 0.1UF+-10% 25V
C 652	0893027	CERAMIC CHIP 0.1UF+-10% 25V
C 653	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 654	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 655	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 656	0893119	CERAMIC CHIP 33PF+-5% 50V
C 662	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 663	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 691	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 694	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 702	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 703	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 704	0893122	CERAMIC CHIP 47PF+-5% 50V
C 705	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 708	0893117	CERAMIC CHIP 22PF+-5% 50V
C 710	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 711	0893118	CERAMIC CHIP 27PF+-5% 50V
C 712	0893173	CERAMIC CHIP 680PF+-5% 50V
C 713	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 714	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 715	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 716	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 718	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 719	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 720	0893117	CERAMIC CHIP 22PF+-5% 50V
C 722	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 724	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 726	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 727	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C 728	0893121	CERAMIC CHIP 39PF+-5% 50V
C 730	0893126	CERAMIC CHIP 100PF+-5% 50V
C 734	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 801	0893067	CERAMIC CHIP 0.1UF+80-20% 25V
C 803	0893217	CERAMIC CHIP 4700PF+-10% 50V
C 805	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C 808	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 809	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 811	0893217	CERAMIC CHIP 4700PF+-10% 50V
C 813	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 815	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 816	0893114	CERAMIC CHIP 12PF+-5% 50V
C 817	0893114	CERAMIC CHIP 12PF+-5% 50V
C 819	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 820	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 822	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 823	0893062	CERAMIC CHIP 1UF+80-20% 16V
C 824	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 825	0893067	CERAMIC CHIP 0.1UF+80-20% 25V
C 826	0893067	CERAMIC CHIP 0.1UF+80-20% 25V
C 828	0893217	CERAMIC CHIP 4700PF+-10% 50V
C 830	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 831	0893042	CERAMIC CHIP 6800PF+-10% 50V
C 832	0893031	CERAMIC CHIP 1000PF+-10% 50V
C 833	0893067	CERAMIC CHIP 0.1UF+80-20% 25V
C 838	0893067	CERAMIC CHIP 0.1UF+80-20% 25V
C 839	0893042	CERAMIC CHIP 6800PF+-10% 50V
C 840	0893031	CERAMIC CHIP 1000PF+-10% 50V
C 842	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 843	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C 844	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C 845	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C 846	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C 847	0893222	CERAMIC CHIP 0.01UF+-10% 50V

SYMBOL-NO	P-NO	DISCRIPTION
C 848	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C 849	0893222	CERAMIC CHIP 0.01UF+-10% 50V
C 851	0893071	CERAMIC CHIP 0.33UF+80-20% 25V
C 852	0893071	CERAMIC CHIP 0.33UF+80-20% 25V
C 932	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 936	0893115	CERAMIC CHIP 15PF+-5% 50V
C 937	0893118	CERAMIC CHIP 27PF+-5% 50V
C 938	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C 945	0893208	CERAMIC CHIP 1000PF+-10% 50V
C 946	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C 948	0893114	CERAMIC CHIP 12PF+-5% 50V
C 949	0893114	CERAMIC CHIP 12PF+-5% 50V
CT 701	5058573	TRIMMER 30P
R 101	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R 103	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W
R 105	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 107	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R 108	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 109	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R 110	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R 111	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R 112	0790204	CHIP RESISTOR 560 OHM+-5% 1/16W
R 113	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R 114	0103817	CHIP RESISTOR 6.8 OHM+-10% 0.1W
R 115	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 116	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 117	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 118	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 119	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 126	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 127	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 128	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 129	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 130	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 131	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 132	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 133	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 134	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 135	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 136	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R 137	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 143	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R 144	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R 145	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 146	0790029	CHIP RESISTOR 270 OHM+-5% 1/16W
R 147	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 149	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 151	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 152	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 153	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 154	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 161	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 162	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 163	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 165	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 167	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 168	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 169	0790231	CHIP RESISTOR 56KOHM+-5% 1/16W
R 172	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 173	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R 174	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 175	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 176	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 177	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 178	0104298	CHIP RESISTOR 100KOHM+-0.5% 1/16W

SYMBOL-NO	P-NO	DISCRIPTION
R 179	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 203	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R 206	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 215	0104118	CHIP RESISTOR 22KOHM 1/10W
R 216	0104273	CHIP RESISTOR 1KOHM+-1% 1/10W
R 221	0104263	CHIP RESISTOR 1.2KOHM+-1% 0.1W
R 223	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R 224	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R 234	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 235	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 236	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R 236	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 237	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 237	0790037	CHIP RESISTOR 470OHM+-5% 1/16W
R 238	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 239	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R 240	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 241	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 242	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R 243	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 246	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R 247	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R 248	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 250	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 251	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 252	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 253	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 254	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 258	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 259	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 260	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 261	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R 263	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R 264	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 265	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 266	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 267	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 268	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 269	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R 272	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 273	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R 274	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 275	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 276	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 277	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 278	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R 279	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 280	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 282	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 283	0790069	CHIP RESISTOR 270KOHM+-5% 1/16W
R 284	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R 285	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 286	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 287	0790056	CHIP RESISTOR 27KOHM+-5% 1/16W
R 297	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 298	0104273	CHIP RESISTOR 1KOHM+-1% 1/10W
R 299	0104273	CHIP RESISTOR 1KOHM+-1% 1/10W
R 300	0104298	CHIP RESISTOR 100KOHM+-0.5% 1/16W
R 301	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R 302	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 303	0790073	CHIP RESISTOR 470KOHM+-5% 1/16W
R 304	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 305	0790029	CHIP RESISTOR 270 OHM+-5% 1/16W
R 306	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 307	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DISCRIPTION
R 308	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 309	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 310	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 311	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 312	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 315	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 317	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 318	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 319	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 321	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 326	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 327	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 328	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 330	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 331	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 332	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 333	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 334	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 336	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R 337	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 339	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 340	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 341	0790022	CHIP RESISTOR 68 OHM+-5% 1/16W
R 349	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 350	0790065	CHIP RESISTOR 120KOHM+-5% 1/16W
R 353	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R 354	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R 358	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 359	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 360	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 361	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 363	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 364	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 372	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 373	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 374	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 375	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 376	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R 377	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R 378	0790063	CHIP RESISTOR 82KOHM+-5% 1/16W
R 379	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R 401L	0790242	CHIP RESISTOR 390KOHM+-5% 1/16W
R 401R	0790242	CHIP RESISTOR 390KOHM+-5% 1/16W
R 402L	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 402R	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 403L	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 403R	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 404	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 405L	0790056	CHIP RESISTOR 27KOHM+-5% 1/16W
R 405R	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R 406	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 407L	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 407R	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 408L	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R 408R	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R 412L	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 412R	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 413	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 414	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 418L	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 418R	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 421L	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 421R	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 422L	0790205	CHIP RESISTOR 680 OHM+-5% 1/16W
R 422R	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DISCRIPTION
R 423L	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R 423R	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R 424L	0104077	CHIP RESISTOR 1.5MOHM+-5% 1/16W
R 424R	0104077	CHIP RESISTOR 1.5MOHM+-5% 1/16W
R 425L	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 425R	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 426L	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 426R	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 428L	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 428R	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 429L	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R 429R	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R 430L	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R 430R	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R 431L	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 431R	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 432L	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R 432R	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R 433L	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R 433R	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R 434	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 436	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 437	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R 438L	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 438R	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 441L	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 441R	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 442L	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R 442R	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R 446	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 450	0790071	CHIP RESISTOR 330KOHM+-5% 1/16W
R 451L	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 451R	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 452	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 454	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 455	0790242	CHIP RESISTOR 390KOHM+-5% 1/16W
R 456	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 457	0790238	CHIP RESISTOR 220KOHM+-5% 1/16W
R 458	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 459	0790206	CHIP RESISTOR 820 OHM+-5% 1/16W
R 460	0790201	CHIP RESISTOR 330 OHM+-5% 1/16W
R 462	0790067	CHIP RESISTOR 180KOHM+-5% 1/16W
R 481	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 482	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 486	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 487	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 601	0104538	CHIP RESISTOR 5.1KOHM+-1% 1/16W
R 602	0104538	CHIP RESISTOR 5.1KOHM+-1% 1/16W
R 604	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 605	0104276	CHIP RESISTOR 5.6KOHM+-1% 1/10W
R 606	0104538	CHIP RESISTOR 5.1KOHM+-1% 1/16W
R 607	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 608	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R 609	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R 610	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R 611	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 612	0790199	CHIP RESISTOR 270 OHM+-5% 1/16W
R 613	0790197	CHIP RESISTOR 180 OHM+-5% 1/16W
R 614	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R 615	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 616	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 617	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 618	0790075	CHIP RESISTOR 680KOHM+-5% 1/16W
R 619	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 620	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W

SYMBOL-NO	P-NO	DISCRIPTION
R 621	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 622	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 623	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 624	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 625	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 626	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R 627	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R 628	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R 629	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 630	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 631	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R 632	0790063	CHIP RESISTOR 82KOHM+-5% 1/16W
R 633	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 635	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R 636	0790241	CHIP RESISTOR 330KOHM+-5% 1/16W
R 638	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 639	0790241	CHIP RESISTOR 330KOHM+-5% 1/16W
R 640	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 641	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 642	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 643	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R 644	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 645	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R 646	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R 647	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 648	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R 649	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 650	0790196	CHIP RESISTOR 150 OHM+-5% 1/16W
R 651	0790196	CHIP RESISTOR 150 OHM+-5% 1/16W
R 652	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R 653	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 655	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R 656	0104115	CHIP RESISTOR 3.9KOHM 1/10W
R 657	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 658	0790002	CHIP RESISTOR 2.2 OHM+-5% 1/16W
R 659	0790002	CHIP RESISTOR 2.2 OHM+-5% 1/16W
R 660	0790002	CHIP RESISTOR 2.2 OHM+-5% 1/16W
R 661	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 662	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 663	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 664	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R 665	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R 667	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 668	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 669	0790002	CHIP RESISTOR 2.2 OHM+-5% 1/16W
R 670	0790002	CHIP RESISTOR 2.2 OHM+-5% 1/16W
R 671	0790002	CHIP RESISTOR 2.2 OHM+-5% 1/16W
R 672	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 673	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W
R 674	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R 675	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 676	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 677	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 680	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R 681	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R 682	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 685	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 688	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 689	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 690	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R 691	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 692	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 693	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 694	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R 695	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DISCRIPTION
R 701	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 703	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 704	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 705	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 706	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 707	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 708	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 709	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 710	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 711	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 713	0104004	CHIP RESISTOR 36KOHM+-5% 1/10W
R 714	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 715	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 716	0104004	CHIP RESISTOR 36KOHM+-5% 1/10W
R 717	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 718	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 719	0104004	CHIP RESISTOR 36KOHM+-5% 1/10W
R 720	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 721	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 722	0104004	CHIP RESISTOR 36KOHM+-5% 1/10W
R 723	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 725	0104004	CHIP RESISTOR 36KOHM+-5% 1/10W
R 726	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 728	0104004	CHIP RESISTOR 36KOHM+-5% 1/10W
R 729	0104004	CHIP RESISTOR 36KOHM+-5% 1/10W
R 731	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 732	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 733	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 735	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 736	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 737	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R 738	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R 739	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R 740	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 741	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R 742	0790065	CHIP RESISTOR 120KOHM+-5% 1/16W
R 744	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R 745	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R 747	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 748	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 749	0790074	CHIP RESISTOR 560KOHM+-5% 1/16W
R 750	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R 751	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 752	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R 753	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 754	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 755	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 756	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 757	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 758	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 759	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R 760	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 761	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 762	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 763	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 765	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 766	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 767	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R 768	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 769	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 774	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 775	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 776	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 777	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 778	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W

SYMBOL-NO	P-NO	DISCRIPTION
R 780	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 781	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 782	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 801	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 802	0103874	CHIP RESISTOR 390KOHM+-5% 0.1W
R 804	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R 805	0790243	CHIP RESISTOR 470KOHM+-5% 1/16W
R 806	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 807	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R 808	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 809	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 811	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 812	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 813	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 814	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 815	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 816	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R 817	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 818	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 819	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 820	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 821	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 822	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 824	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 825	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 826	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 827	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 828	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 829	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 830	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 831	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 832	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 836	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 837	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 838	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 839	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 840	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16W
R 841	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 844	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 845	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 846	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 847	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 848	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 849	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 850	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 851	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 852	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 854	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 856	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 857	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 858	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 859	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 860	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 861	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 862	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R 863	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R 864	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 865	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 866	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 867	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 868	0104116	CHIP RESISTOR 39KOHM 1/10W
R 870	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 872	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 873	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 874	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DISCRIPTION
R 875	0790073	CHIP RESISTOR 470KOHM+-5% 1/16W
R 876	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 877	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 878	0790243	CHIP RESISTOR 470KOHM+-5% 1/16W
R 879	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 880	0104542	CHIP RESISTOR 10KOHM+-1% 1/16W
R 881	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R 882	0104116	CHIP RESISTOR 39KOHM 1/10W
R 883	0790063	CHIP RESISTOR 82KOHM+-5% 1/16W
R 884	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R 885	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R 886	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 887	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R 888	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R 889	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R 890	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 891	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 892	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 893	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 894	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W
R 895	0104503	CHIP RESISTOR 27KOHM+-1% 1/16W
R 896	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 897	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 898	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 899	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R 900	0104112	CHIP RESISTOR 47KOHM+-1% 0.1W
R 901	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R 902	0104112	CHIP RESISTOR 47KOHM+-1% 0.1W
R 903	0104503	CHIP RESISTOR 27KOHM+-1% 1/16W
R 904	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 905	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 907	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R 908	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R 910	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R 911	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 916	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R 917	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R 918	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R 922	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 923	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 925	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 935	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 936	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 937	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 938	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 940	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 942	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 945	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R 946	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 947	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 948	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 952	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R 953	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 954	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R 955	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 960	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R 961	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 965	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 966	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 967	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 968	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 969	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 970	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R 972	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R 973	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DISCRIPTION
R 974	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R 975	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R 978	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 979	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 982	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 983	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W
R 986	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 988	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 990	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 991	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 992	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 993	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 994	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R 995	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R 996	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R 997	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R 998	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
RT 101	5040124	SEMI VARIABLE 2.2KOHM
RT 201	5040125	SEMI VARIABLE 4.7KOHM
RT 204	0104164	CHIP RESISTOR 3.3KOHM+-10% 1/8W
RT 205	0104162	CHIP RESISTOR 2.2KOHM 1/8W
RT 206	0104158	CHIP RESISTOR 1.2KOHM+-10% 1/8W
RT 207	0104151	CHIP RESISTOR 330 OHM+-10% 1/8W
RT 209	0104166	METAL FILM 4.7KOHM+-10% 1/8W
RT 211	0104176	CHIP RESISTOR 27KOHM+-10% 1/8W
RT 212	0104173	CHIP RESISTOR 15KOHM+-10% 1/8W
RT 213	0104175	CHIP RESISTOR 22KOHM+-10% 1/8W
RT 214	0104175	CHIP RESISTOR 22KOHM+-10% 1/8W
RT 215	0104145	CHIP RESISTOR 120 OHM+-10% 1/8W
RT 217	0104144	CHIP RESISTOR 100 OHM+-10% 1/8W
RT 218	0104153	CHIP RESISTOR 470 OHM+-10% 1/8W
RT421L	5040126	SEMI VARIABLE 10KOHM
RT421R	5040126	SEMI VARIABLE 10KOHM
RT422L	5040126	SEMI VARIABLE 10KOHM
RT422R	5040126	SEMI VARIABLE 10KOHM
RT 481	5040126	SEMI VARIABLE 10KOHM
RT 482	5040126	SEMI VARIABLE 10KOHM
R1801	0790189	CHIP RESISTOR 47 OHM+-5% 1/16W
R1802	0790018	CHIP RESISTOR 39 OHM+-5% 1/16W
R1803	0790018	CHIP RESISTOR 39 OHM+-5% 1/16W
R1936	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1937	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1938	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1939	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1940	0790054	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R1941	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R1942	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R1945	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1946	0790054	CHIP RESISTOR 1.8KOHM+-5% 1/16W
D 091	5382221	LED PLT-462T3
D 101	5337421	DIODE DAN222
D 103	5337421	DIODE DAN222
D 202	5339181	DIODE HSM88S
D 203	5337421	DIODE DAN222
D 205	5337421	DIODE DAN222
D 601	5337352	DIODE MA132WA
D 602	5337352	DIODE MA132WA
D 603	5337421	DIODE DAN222
D 701	5337131	DIODE MA141WK
D 702	5337131	DIODE MA141WK
D 703	5337131	DIODE MA141WK
D 802	5337421	DIODE DAN222
D 804	5337352	DIODE MA132WA
D 805	5337352	DIODE MA132WA
D 806	5337421	DIODE DAN222

SYMBOL-NO	P-NO	DISCRIPTION
D 807	5337422	DIODE DA221
D 808	5337422	DIODE DA221
D1801	5337421	DIODE DAN222
IC 101	1350481	IC HA118100MA
IC 102	1352001	IC CXA1208R
IC 103	1352141	IC LVA523F
IC 104	1350402	IC NJM2234M
IC 105	1350402	IC NJM2234M
IC 201	1351973	IC CXA1207AR
IC 203	1351943	IC CXL5502M
IC 204	1350411	IC NJM2235M
IC401L	1352431	IC LA7453W
IC401R	1352431	IC LA7453W
IC 402	1352451	IC LA7456M
IC 403	1352361	IC NJU4066B
IC404L	1351051	IC NJM2107F
IC404R	1351051	IC NJM2107F
IC 601	1361811	IC CXA1204Q
IC 602	1352721	IC XRA10358F
IC 603	5307052	IC LB1851M
IC 604	5307091	IC LB1857
IC 605	5355571	IC NJM4556M
IC 606	5304282	IC TA7291F
IC 607	1352191	IC XRA10393F
IC 701	1354681	IC L7A0712
IC 702	5305832	IC SC7S08F
IC 703	1355216	IC HN62321FCH2
IC 704	1351051	IC NJM2107F
IC 801	1355459	IC CXP80116-591Q
IC 802	1352731	IC S8420DF
IC 806	5305822	IC SN7S32F
IC 807	5305832	IC SC7S08F
IC 808	1354511	IC XRM93C46AF-EA
IC 810	1352721	IC XRA10358F
IC 812	1352191	IC XRA10393F
IC 931	1355348	IC HD404439
IC 932	1352026	IC UPD6451A813
IC 935	1351761	IC NJM2406F
Q 091	1322341	TRANSISTOR PT4810F
Q 092	5382142	DIODE NJL5161K
Q 093	5382142	DIODE NJL5161K
Q 094	1322341	TRANSISTOR PT4810F
Q 101	5326521	TRANSISTOR 2SA1576
Q 102	1323294	TRANSISTOR 2SA1774RS
Q 103	1323171	TRANSISTOR UN9213
Q 104	1323291	TRANSISTOR 2SC4617
Q 105	5326521	TRANSISTOR 2SA1576
Q 106	1323171	TRANSISTOR UN9213
Q 107	5326521	TRANSISTOR 2SA1576
Q 108	1323171	TRANSISTOR UN9213
Q 109	1323291	TRANSISTOR 2SC4617
Q 110	1323294	TRANSISTOR 2SA1774RS
Q 111	1323294	TRANSISTOR 2SA1774RS
Q 113	1323171	TRANSISTOR UN9213
Q 115	1323291	TRANSISTOR 2SC4617
Q 116	1323171	TRANSISTOR UN9213
Q 117	1323291	TRANSISTOR 2SC4617
Q 124	5328721	TRANSISTOR 2SD1328
Q 125	5328721	TRANSISTOR 2SD1328
Q 201	1323231	TRANSISTOR 2SB1462
Q 202	1323291	TRANSISTOR 2SC4617
Q 204	1323291	TRANSISTOR 2SC4617
Q 205	1323231	TRANSISTOR 2SB1462
Q 206	1323291	TRANSISTOR 2SC4617
Q 208	1323231	TRANSISTOR 2SB1462

SYMBOL-NO	P-NO	DISCRIPTION
Q 209	1323291	TRANSISTOR 2SC4617
Q 210	1323231	TRANSISTOR 2SB1462
Q 211	1323291	TRANSISTOR 2SC4617
Q 212	5326452	TRANSISTOR DTC144EU
Q 213	1323291	TRANSISTOR 2SC4617
Q 214	1323291	TRANSISTOR 2SC4617
Q 217	1323291	TRANSISTOR 2SC4617
Q 218	1323291	TRANSISTOR 2SC4617
Q 219	1323172	TRANSISTOR UN9113
Q 221	1323291	TRANSISTOR 2SC4617
Q 223	1323231	TRANSISTOR 2SB1462
Q 224	1323291	TRANSISTOR 2SC4617
Q 225	5326471	TRANSISTOR 2SB1218 (R)
Q 226	1323171	TRANSISTOR UN9213
Q 234	5326471	TRANSISTOR 2SB1218 (R)
Q 235	1323171	TRANSISTOR UN9213
Q 238	1323231	TRANSISTOR 2SB1462
Q 239	1323231	TRANSISTOR 2SB1462
Q 240	1323231	TRANSISTOR 2SB1462
Q 401	1323271	TRANSISTOR DTC144EE
Q 402L	1323291	TRANSISTOR 2SC4617
Q 402R	1323291	TRANSISTOR 2SC4617
Q 405	1323291	TRANSISTOR 2SC4617
Q 406	1323291	TRANSISTOR 2SC4617
Q 409	1323291	TRANSISTOR 2SC4617
Q 411	1323294	TRANSISTOR 2SA1774RS
Q 424	1323271	TRANSISTOR DTC144EE
Q 602	1323291	TRANSISTOR 2SC4617
Q 603	1323294	TRANSISTOR 2SA1774RS
Q 604	5326101	TRANSISTOR FMW1
Q 607	1323291	TRANSISTOR 2SC4617
Q 608	1323291	TRANSISTOR 2SC4617
Q 609	1323294	TRANSISTOR 2SA1774RS
Q 610	1323291	TRANSISTOR 2SC4617
Q 611	1323291	TRANSISTOR 2SC4617
Q 701	5326421	TRANSISTOR 2SC4081BR
Q 702	5326421	TRANSISTOR 2SC4081BR
Q 703	5326421	TRANSISTOR 2SC4081BR
Q 704	5326421	TRANSISTOR 2SC4081BR
Q 705	5326421	TRANSISTOR 2SC4081BR
Q 706	5326421	TRANSISTOR 2SC4081BR
Q 707	5326421	TRANSISTOR 2SC4081BR
Q 709	5326521	TRANSISTOR 2SA1576
Q 710	5326421	TRANSISTOR 2SC4081BR
Q 801	1323294	TRANSISTOR 2SA1774RS
Q 802	1323291	TRANSISTOR 2SC4617
Q 803	5326512	TRANSISTOR 2SB1188
Q 804	1323172	TRANSISTOR UN9113
Q 805	1323171	TRANSISTOR UN9213
Q 806	1323294	TRANSISTOR 2SA1774RS
Q 810	1323171	TRANSISTOR UN9213
Q 812	1323171	TRANSISTOR UN9213
Q 813	1323171	TRANSISTOR UN9213
Q 814	1323291	TRANSISTOR 2SC4617
Q 931	1323171	TRANSISTOR UN9213
Q 932	1323171	TRANSISTOR UN9213
Q 933	1323172	TRANSISTOR UN9113
Q 934	1323171	TRANSISTOR UN9213
Q 937	1323171	TRANSISTOR UN9213
Q 938	1323171	TRANSISTOR UN9213
ZD 601	5339213	DIODE RD2.7MB2
ZD 602	5337016	DIODE MA3047M
ZD 801	5339213	DIODE RD2.7MB2
L 101	0773132	CHOKE COIL 100UH+-5%
L 102	0773132	CHOKE COIL 100UH+-5%

SYMBOL-NO	P-NO	DISCRIPTION
L 103	0773094	CHOKE COIL 100UH+-10%
L 104	0773124	CHOKE COIL 27UH+-5%
L 105	0773094	CHOKE COIL 100UH+-10%
L 107	0773132	CHOKE COIL 100UH+-5%
L 108	0773132	CHOKE COIL 100UH+-5%
L 109	0773133	CHOKE COIL 120UH+-5%
L 110	0773092	CHOKE COIL 47UH+-10%
L 111	0773123	CHOKE COIL 22UH+-5%
L 112	0773123	CHOKE COIL 22UH+-5%
L 114	0773135	CHOKE COIL 180UH+-5%
L 116	0773134	CHOKE COIL 150UH+-5%
L 201	0773134	CHOKE COIL 150UH+-5%
L 203	5159177	COIL 470UH
L 204	0773136	CHOKE COIL 220UH+-5%
L 205	0773135	CHOKE COIL 180UH+-5%
L 206	0773116	CHOKE COIL 6.8UH+-10%
L 207	0773116	CHOKE COIL 6.8UH+-10%
L 209	0773097	CHOKE COIL 330UH+-10%
L 210	0773111	CHOKE COIL 2.7 UH
L 211	0773136	CHOKE COIL 220UH+-5%
L 212	0773133	CHOKE COIL 120UH+-5%
L 213	0773129	CHOKE COIL 68UH+-5%
L 214	0773125	CHOKE COIL 33UH+-5%
L 215	0773127	CHOKE COIL 47UH+-5%
L 216	0773132	CHOKE COIL 100UH+-5%
L 217	0773127	CHOKE COIL 47UH+-5%
L 218	0773118	CHOKE COIL 10UH+-5%
L 219	0773092	CHOKE COIL 47UH+-10%
L 220	0773094	CHOKE COIL 100UH+-10%
L 221	0773092	CHOKE COIL 47UH+-10%
L 223	0773066	CHOKE COIL 22 UH
L 401	0773126	CHOKE COIL 39UH+-5%
L 601	0773094	CHOKE COIL 100UH+-10%
L 602	0773097	CHOKE COIL 330UH+-10%
L 603	0773094	CHOKE COIL 100UH+-10%
L 604	0773097	CHOKE COIL 330UH+-10%
L 701	0773094	CHOKE COIL 100UH+-10%
L 702	0773094	CHOKE COIL 100UH+-10%
L 703	0773094	CHOKE COIL 100UH+-10%
L 704	0773123	CHOKE COIL 22UH+-5%
L 706	0773094	CHOKE COIL 100UH+-10%
L 707	0773132	CHOKE COIL 100UH+-5%
L 801	0773091	CHOKE COIL 33UH
L 802	0773092	CHOKE COIL 47UH+-10%
L 803	0773087	CHOKE COIL 10UH+-10%
L 804	0773091	CHOKE COIL 33UH
L 805	0773087	CHOKE COIL 10UH+-10%
L 932	0773087	CHOKE COIL 10UH+-10%
L 934	0773126	CHOKE COIL 39UH+-5%
X 101	5778421	CRYSTAL 3.58MHZ
X 601	5778361	CRYSTAL 5.9476MHZ
X 701	5778761	CRYSTAL 14.3MHZ
X 801	5778351	CRYSTAL 5.16MHZ
X 931	5784531	OSCILLATOR 32KHZ
X 932	5778231	CRYSTAL 4MHZ
CP 102	5172264	FILTER, BAND PASS 3.58MHZ
CP 103	5172512	FILTER, BAND PASS 3.58MHZ
CP 104	5172651	FILTER, BAND PASS 4.32MHZ
CP 201	5172522	FILTER, LOW PASS 6MHZ
CP 202	5172523	DELY LINE 180ns
CP 203	5172474	TRAP, COIL 3.58MHZ
CP 204	5172521	FILTER, LOW PASS 5.5MHZ
CP401L	5172661	FILTER, BAND PASS 1.5MHZ
CP401R	5172313	FILTER, BAND PASS 1.7MHZ
CP 701	5172264	FILTER, BAND PASS 3.58MHZ

SYMBOL-NO	P-NO	DISCRIPTION
F 981	5723231	FUSE 1.6A
F 982	5723231	FUSE 1.6A
F 983	5723231	FUSE 1.6A
H 701	6815001	HOLDER
HIC101	1390032	PWB ASSY HTS9108A
J1801	5696363	PLATE
LD1801	5317301	LED
LED701	5382211	DIODE LN1251CAL-23
S 091	5635461	SWITCH
S 092	5635451	SWITCH
S 931	5635541	SWITCH
S 932	5635541	SWITCH
SW 701	5635601	SWITCH
S1802	5635541	SWITCH
S1803	5635541	SWITCH
S1804	5635541	SWITCH
VA 701	5337481	DIODE 1SV221-T
VA 702	5337031	DIODE 1SV201
CT1101	5058575	TRIMMER 25P

CAMERA SECTION

C1001	0893223	CERAMIC CHIP 0.047UF+80-20% 16V
C1002	0893223	CERAMIC CHIP 0.047UF+80-20% 16V
C1003	0893223	CERAMIC CHIP 0.047UF+80-20% 16V
C1004	0893223	CERAMIC CHIP 0.047UF+80-20% 16V
C1005	0893223	CERAMIC CHIP 0.047UF+80-20% 16V
C1006	0893223	CERAMIC CHIP 0.047UF+80-20% 16V
C1007	0893156	CERAMIC CHIP 39PF+-5% 50V
C1009	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C1011	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1012	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1013	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1014	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1015	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1016	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1017	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1018	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1019	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1022	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1023	0893154	CERAMIC CHIP 27PF+-5% 50V
C1024	0893154	CERAMIC CHIP 27PF+-5% 50V
C1026	0893055	CERAMIC CHIP 0.1UF+80-20% 16V
C1027	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1028	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1029	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1030	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1036	0256786	ELECTROLYTIC 2200UF 6V
C1037	0893154	CERAMIC CHIP 27PF+-5% 50V
C1038	0893154	CERAMIC CHIP 27PF+-5% 50V
C1101	0893151	CERAMIC CHIP 15PF+-5% 50V
C1102	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1103	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1104	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1105	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1106	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1107	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1108	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1109	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1110	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1111	0893151	CERAMIC CHIP 15PF+-5% 50V
C1112	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1115	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1116	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1117	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1120	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1121	0893225	CERAMIC CHIP 0.1UF+80-20% 16V

SYMBOL-NO	P-NO	DISCRIPTION
C1122	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1126	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1127	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1128	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C1129	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
R1001	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1002	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1003	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1004	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1005	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R1006	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1007	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1012	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1013	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R1015	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1016	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1017	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1018	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1020	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1021	0790016	CHIP RESISTOR 27 OHM+-5% 1/16W
R1022	0790016	CHIP RESISTOR 27 OHM+-5% 1/16W
R1023	0790016	CHIP RESISTOR 27 OHM+-5% 1/16W
R1024	0790016	CHIP RESISTOR 27 OHM+-5% 1/16W
R1025	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R1026	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R1027	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1028	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1031	0790006	CHIP RESISTOR 4.7 OHM+-5% 1/16W
R1101	0790189	CHIP RESISTOR 47 OHM+-5% 1/16W
R1102	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R1103	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R1104	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R1112	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R1113	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1114	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1115	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1116	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1117	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1119	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1120	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1121	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1122	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1123	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1124	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1125	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1126	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1127	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1128	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1129	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1130	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1131	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1132	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1133	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1134	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1135	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1136	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1137	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1138	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1139	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1140	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1141	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1142	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1143	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1144	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1145	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W

SYMBOL-NO	P-NO	DISCRIPTION
R1146	0790203	CHIP RESISTOR 470 OHM+-5% 1/16W
R1147	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1148	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1149	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1150	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1151	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1152	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1153	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1154	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1155	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1156	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1157	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1158	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1161	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1162	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1163	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1164	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1165	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1166	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1167	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1168	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1169	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1177	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1178	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R1180	0104561	METAL FILM 18KOHM+-1% 16W
R1182	0790193	CHIP RESISTOR 82 OHM+-5% 1/16W
R1183	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1184	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1185	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1186	0104554	CHIP RESISTOR 1KOHM+-1% 1/16W
R1187	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R1188	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R1195	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1196	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1205	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R1206	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R1207	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R1208	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1209	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R1210	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1236	0790198	CHIP RESISTOR 220 OHM+-5% 1/16W
R1237	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
D1001	5337354	DIODE MA133
D1003	5337352	DIODE MA132WA
D1004	5337351	DIODE MA132WK
D1005	5337353	DIODE MA132K
D1006	5337353	DIODE MA132K
D1102	5337451	DIODE RB715F
IC1002	1352711	IC HA118144
IC1101	1354721	IC HD49306
IC1102	1354771	IC HG51A002A02FB
IC1102	1354701	IC HG51A002A
IC1103	1352671	IC HD49307
IC1104	1354691	IC HG51A004
IC1104	1354692	IC HG51A007
IC1105	1388851	IC PC4825A
IC1105	1388852	IC PC4825A
Q1001	1323291	TRANSISTOR 2SC4617
Q1002	1323341	TRANSISTOR 2SC4691
Q1003	1323321	TRANSISTOR 2SD2216
Q1004	1323331	TRANSISTOR 2SA1806
Q1005	1323341	TRANSISTOR 2SC4691
Q1008	1323331	TRANSISTOR 2SA1806
Q1009	1323341	TRANSISTOR 2SC4691
Q1101	1323321	TRANSISTOR 2SD2216

SYMBOL-NO	P-NO	DISCRIPTION
Q1102	1323321	TRANSISTOR 2SD2216
Q1103	1323321	TRANSISTOR 2SD2216
Q1104	5326204	TRANSISTOR FMG1
Q1105	1323271	TRANSISTOR DTC144EE
L1001	0773132	CHOKE COIL 100UH+-5%
L1002	0773094	CHOKE COIL 100UH+-10%
L1003	0773091	CHOKE COIL 33UH
L1004	0773136	CHOKE COIL 220UH+-5%
L1101	0773118	CHOKE COIL 10UH+-5%
L1103	0773092	CHOKE COIL 47UH+-10%
L1104	0773118	CHOKE COIL 10UH+-5%
L1105	0773118	CHOKE COIL 10UH+-5%
L1106	0773118	CHOKE COIL 10UH+-5%
L1401	0773087	CHOKE COIL 10UH+-10%
L1402	0773087	CHOKE COIL 10UH+-10%
L1403	0773087	CHOKE COIL 10UH+-10%
L1404	0773087	CHOKE COIL 10UH+-10%
X1101	5778751	CRYSTAL 14.3MHZ
CP1101	5172613	FILTER, BAND PASS 3.58MHZ
CP1102	5172573	FILTER, LOW PASS 5MHZ
F1401	5721844	FUSE
S1401	5634711	SWITCH
ELECTRONIC VIEWFINDER SECTION		
C 805	0256871	ELECTROLYTIC 47UF 25V
C 808	0256153	ELECTROLYTIC 3.3MF 50V
C 809	0201997	CERAMIC DISC 0.1UF+80-20% 50V
C 811	0209852	CERAMIC CHIP 180PF+-5% 50V
C 812	0201997	CERAMIC DISC 0.1UF+80-20% 50V
C 814	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 816	0202151	CERAMIC CHIP 2200PF+-5% 50V
C 817	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 819	0893062	CERAMIC CHIP 1UF+80-20% 16V
R 801	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 802	0103874	CHIP RESISTOR 390KOHM+-5% 0.1W
R 803	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 804	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 805	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 806	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 807	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 808	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 809	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 811	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 812	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 813	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 814	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 815	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 816	0103814	CHIP RESISTOR 3.9 OHM+-10% 0.1W
R 817	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 818	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 819	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 820	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 821	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 822	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 824	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 826	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 827	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 828	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
RT 802	5040082	SEMI VARIABLE 500 OHM
RT 803	5035204	SEMI VARIABLE 2.2MOHM
RT 805	5035204	SEMI VARIABLE 2.2MOHM
D 801	5328321	DIODE MA151K (MH)
D 802	5337321	DIODE MA199
IC 801	1351631	IC HA118121FP
Q 801	5323831	TRANSISTOR 2SD974

SYMBOL-NO	P-NO	DISCRIPTION
Q 802	5326682	TRANSISTOR XN1B301
T 801	5240562	TRANS, FLYBACK
L 801	0773003	COIL 47UH
L 802	5244016	COIL
CS 801	5887002	MINI CONNECTOR
TF 801	5721352	FUSE

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